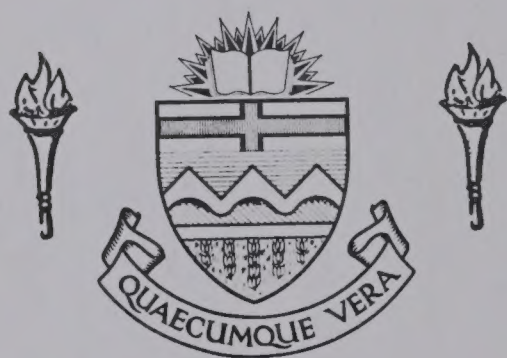


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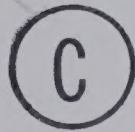
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A THAI VERSION OF THE SIXTEEN PERSONALITY FACTOR
QUESTIONNAIRE

BY



TAWIL LADAWAN

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES
IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE
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With the FACULTY OF GRADUATE STUDIES

Factor Questionnaire," Form C--commonly known as the 16 P.F.

Test, might serve for non-English speaking subjects, the

test was

The undersigned certify that they have read, and
recommend to the Faculty of Graduate Studies for

acceptance, a thesis entitled "A Thai Version of the

Sixteen Personality Factor Questionnaire," submitted by

Tawil Ladawan in partial fulfilment of the requirements

for the degree of Master of Education.

both English and Thai. Appropriate

ABSTRACT

With the conviction that the "Sixteen Personality Factor Questionnaire," Form C--commonly known as the 16 P.F. Test, might serve for non-English speaking subjects, the test was translated into the Thai language.

The purpose of the present study was thus to verify the Thai version of the test, or to determine to what extent the Thai version parallels the English version.

Two versions of the test, one the Thai and the other the English, were administered to 54 subjects who were considered proficient in both English and Thai. Appropriate statistical analysis was then employed to test the hypotheses adopted in the study.

It was found that 13 of the 16 factors of the Thai version were accepted, on the basis of statistical analyses, as being parallel to those of the English version. Improvements in wording used in the Thai version for those items of the unaccepted factors, as well as a few other items were then undertaken.

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CHAPTER I

THE NATURE AND SIGNIFICANCE OF THE STUDY

Introduction

Society recognizes that good teachers are needed in schools but that they vary in effectiveness. Because of the need for competent teachers, the field of teacher education has undergone careful scrutiny. As a result, a number of devices, designed to raise professional standards, have been employed. For instance, systems of selection of appropriate trainees, programs intended to upgrade teacher training, special procedures for the supervision and in-service training of teachers already in the profession, etc., are common throughout North America. All of these activities arise from the conviction that it is both possible and desirable to improve the quality of teaching, hence the quality of education in general.

In order to search for the desirable qualities of teachers, including possible causes of success and failure in teaching, a substantial amount of research has been carried out. The relevant studies may be traced back as early as Ruediger and Strayer (1910) who tried to find the "Quality of Merit in Teaching." They concluded that those qualities were: discipline, teaching skill, initiative, personality, studiousness, follow suggestion, and good health. In a study of causes of failure of

elementary teachers Little (1914) listed the following causes: poor discipline, weak personality, lack of teaching skill, lack of interest, laziness--no daily preparation, failure to cooperate, and poor health.

Cattell (1931), from a survey of opinions of a heterogeneous collection of judges, ranging from senior secondary pupils to several Directors of Education, concluded that the following ten qualities were the most important in teaching success: intelligence, personality and will, sympathy and tact, open-mindedness, sense of humour, idealism, kindness, enthusiasm, perseverance, and self-control. Of these qualities, Cattell considered the first six to be twice as important as the other four.

The characteristics of teachers can also be obtained from the responses of the students towards their teachers, as shown by Hart (1934), who analyzed the description given by several thousand students of the teachers they liked best. He found the best-liked teacher to be friendly, fair, good natured, reasonable in his demands, and clear and effective in presentation of lesson material, as well as being in control of his class. He found that the least-liked teacher was characterized as being mean, unreasonable, ill-mannered, too strict, inconsiderate of pupils' feelings, unfair in marking and grading, uninterested in pupils, superior, overbearing, and as having no control of the class.

In similar study, Robbins(1944) reported the opinions

of 125 student-teachers on the most desirable traits of teachers. In rank order, those traits were: makes the course interesting, knows the subject-matter of the course, shows a great deal of enthusiasm, has the material well organized, encourages student participation, uses many practical illustrations, has a real sense of humour, has a friendly personality, shows interest in students, has a pleasant voice, is neat in dress, and has poise and a business-like attitude.

Witty (1950) analyzed 12,000 letters from pupils in grade 2 to grade 12 on the topic, "The Teacher Who Has Helped Me Most," and found that the teacher traits mentioned most often were: cooperative democratic attitude, kindness and consideration for the individual, patience, wide variety of interests (well-rounded personality), good general appearance and pleasing manner, fairness and impartiality, sense of humour, good disposition and consistent behaviour, interest in pupils' problems, flexibility, use of recognition and praise, and unusual proficiency in teaching a particular subject. In a second study in which 33,000 letters were analyzed, Witty (1950) reported on the negative traits of teachers as cited by pupils. These traits, in order of frequency, were: bad-tempered and intolerant, unfair and inclined to have favourites, disinclined to show interest in pupils or to take time to help them, unreasonable in demands, tendency to be gloomy and unfriendly, sarcastic and inclined to use ridicule, unattractive in appearance, impatient and

inflexible, tendency to talk excessively, inclined to talk down to pupils, overbearing and conceited, and lacking in sense of humour.

To the student teachers who are going to become teachers, personality is one of the most important qualities. Other studies, for example: Schorling and Batchelder (1956); McGuire, Myers and Durrance (1959); Wingo and Schorling (1960); and Inlow (1963) led to further suggestions that a student teacher had to assert himself as a professional person in his own right, and, moreover, he had to draw heavily on his personality resources to be successful in teaching.

A number of research workers, after having studied the qualities of teachers, including causes of success and failure in teaching, have adopted the position that teacher personality is a major determining factor. Symonds (1947) offered the thought that teaching is essentially an expression of personality, and that this must be taken into account in the selection of candidates. Also Barr's (1952) review of prediction studies led him to the conclusion that there seemed to be general agreement regarding the importance of the teacher's personality to teaching success.

Stout (1955) emphasized the importance of teacher personality when she stated: "If we believe man is educable, then we must also believe in the selection of those persons whose intelligence, personality, and attitude best fit them to teach effectively." Crow and Crow (1964), again, suggested a similar idea--"Selection usually is based on

such factors as health and physical fitness, and personal qualities (including voice, academic achievement and evidenced interest in profession). We are concerned at this point with the kind of educational preparation needed for entrance into teaching."

In a more recent publication, Thelen (1967) emphasized the importance of teacher personality as the "organizing principle of the classroom society." He concluded: "The teacher has great power, and the power is exerted in relationships and also through those aspects of transactions which lie below consciousness. In short, teacher personality, not method, materials, or procedure, is the most important factor" (p. 265).

It is thus evident that personality is considered to be one of the very important factors determining success or failure in teaching, more generally, in the teaching profession. With this conviction, a study of the personality structure of student teachers and experienced teachers in Thailand was planned. The subjects were to be full-time and part-time students at the College of Education, Mahasarakam, Thailand, who were studying for their Bachelor's Degree in Education.

One of the instruments which was to be used in the project was the "Sixteen Personality Factor Questionnaire--Form C," commonly known as "the 16 P.F. Test," or "Cattell's 16 P.F." This instrument was developed by R. B. Cattell, at the Institute for Personality and Ability

Testing (IPAT), University of Illinois, U.S.A. The instrument was considered an appropriate tool for the project, as Cattell (1948) had emphasized that:

I have been interested now for years in the description, measurement, and evaluation of personality factors. On the basis of this work I would suggest that experimental designs now being planned in teacher personnel research should include measures of at least six of ten or twelve personality factors we already find to be reasonably confirmed by two or more researchers (Cattell, 1948; pp. 718-719).

Later, Cattell (1962) wrote of his questionnaire:

Thus, Form C tests as much of the total personality as can be covered by questionnaire, according to the most up-to-date psychological research. It gets at such basic, independent factors as emotional stability, dominance, timidity, shrewdness, intelligence, enthusiasm, conservatism, nervous tension, etc., and the factors involved in neuroticism, morale, leadership, social adjustment, and vocational preference and success (Cattell, 1962; p. 5).

By using the 16 P.F. Test with the subjects in Thailand, it was anticipated that the following information would be obtained: (a) the personality structure of the student teachers and experienced teachers in Thailand; (b) how the two groups differed, if at all; and (c) to what extent their personality relates to academic achievement, and to the success and failure in their careers.

It was anticipated that the results from this planned large scale study might serve as an effective guide to certain aspects of vocational ability and aptitude. In other words, it was expected that this study would assist in the furtherance of knowledge needed to improve selection, training and retention of teachers. Such knowledge would ultimately be of value as guidelines for teacher training

institutions, and in guidance given to parents about their children's choice of vocation, and also to both student teachers and experienced teachers.

Statement of the Problem

According to the plan, the subjects involved were to be the Thai students studying at the College of Education, Mahasarakam, Thailand. However, it was considered that the English language would be inconvenient for the subjects who used only the Thai language in their daily lives. Therefore, in this preliminary study, the test instrument (the 16 P.F. Test--Form C) was translated into the Thai language to discover whether the personality test stood up to scrutiny in terms of its validity and reliability when used in the Thai version. If so, it could then be used, along with other instruments, in the planned project in the Thai translation. This would overcome the inconvenience of testing students in a foreign language and ensure more cooperation from the subjects.

Previously, some studies had been made using a similar method, to study Thai subjects. That is, a test instrument was translated from the original standard English version into the Thai language. The students were then tested, and some interpretations were given. But the study was carried out without any attention being paid to the verification of the validity of the test instrument. The problem of whether the test remains the same test (or measures the same traits) after being translated from one

language to another language and administered in a different cultural setting was not investigated.

Thus the purpose of the present study was essentially a preliminary pilot investigation, as mentioned above. Its purpose was to determine if the 16 P.F. Test (Form C) remains the same test (or measures the same traits of personality) after being translated from the English language into the Thai language. Only when this question has been answered can the test instrument be safely used in the further study of the personality traits of prospective teachers.

General Procedures

The instrument used in the study (Sixteen Personality Factor Questionnaire--Form C) was carefully translated into the Thai language by the present writer. The next step was to administer both the English and Thai versions to a group of people who were fluent in both languages.

The subjects involved in the study were 54 Thai students studying at the University of Alberta during the summer session of 1970. They were considered to be competent in both the English and Thai languages. Since the purpose of the study was to verify whether or not the 16 P.F. Test remains the same after translation, the subjects were randomly divided into two groups of twenty seven. The group designated Group I was given the English version first, while Group II was given the Thai version

first. After a lapse of seven days, they were tested again, Group I being given the Thai version and Group II the English version.

Appropriate statistical analyses were then applied to find the answer to the problem mentioned above.

Assumptions

The basic assumptions of the present study are set out below.

1. It was assumed that the subjects cooperated well in the study, i.e., all answers were provided frankly and truthfully. It was also assumed that the subjects knew both the Thai and English languages well enough to comprehend all the items in the questionnaire.

2. Since a seven-day interval was involved between test and retest, it was assumed that the personality of each of the subjects remained the same. In other words, the choices they made on the first day (first run of the testing) would remain unchanged for the next seven days (second run of the testing) (See Chapter III under the heading "Collection of Data" for the details of the procedure of testing).

3. It was also assumed that there was no particular mental set associated with responding to the test items written in either English or in Thai.

Delimitations

In accordance with the purposes of the study, consideration was given only to the examination of whether

or not the test measured the same personality traits in the Thai language as in English. Therefore:

1. No attempt was made to assess the level of attainment of any individual, or group of individuals.
2. No comparisons were made as between different attributes of the population, i.e., sex, age, career, or order of testing.
3. No attempt was made to develop inferential statistics, or to draw any conclusions about the population.

Definition of Terms

1. The 16 P.F. Test: refers to "Sixteen Personality Factor Questionnaire, Form C," developed by R. B. Cattell, at the University of Illinois, U.S.A.
2. The English Version: refers to the standard English version of the 16 P.F. Test. The data obtained by using the English version were designated E1 and E2.*
3. The Thai Version: refers to the 16 P.F. Test translated into the Thai language. The data obtained by using the Thai version were designated T2 and T1.*
4. Student Teachers: refers to persons who intend to become teachers and who are studying for their Bachelor's Degree in Education at the College of Education, Mahasarakam, Thailand (See Appendix B).
5. Experienced Teachers: refers to persons who have already served as teachers. They are part-time students and

* See Chapter III under the heading "The English Version and the Thai Version" for further information.

they also are studying for their Bachelor Degrees in Education at the College of Education, Mahasarakam, Thailand.

6. Personality: refers to the 16 factors isolated by Cattell from the "Sixteen Personality Factor Questionnaire." These personality traits are:

- (1) Factor A (Reserved vs. Outgoing)
- (2) Factor B (Less intelligent vs. More intelligent)
- (3) Factor C (Affected by feeling vs. Emotionally stable)
- (4) Factor E (Humble vs. Assertive)
- (5) Factor F (Sober vs. Happy-go-lucky)
- (6) Factor G (Expedient vs. Conscientious)
- (7) Factor H (Shy vs. Venturesome)
- (8) Factor I (Tough-minded vs. Tender-minded)
- (9) Factor L (Trusting vs. Suspicious)
- (10) Factor M (Practical vs. Imaginative)
- (11) Factor N (Forthright vs. Shrewd)
- (12) Factor O (Placid vs. Apprehensive)
- (13) Factor Q1 (Conservative vs. Experimenting)
- (14) Factor Q2 (Group-dependent vs. Self-Sufficient)
- (15) Factor Q3 (Undisciplined Self-conflict vs. Controlled)
- (16) Factor Q4 (Relaxed vs. Tense).

CHAPTER II

REVIEW OF RELATED LITERATURE

This chapter will consist of four parts: (a) an introduction to the test and the profiles of the 16 P.F. Test for different occupations, (b) the studies involving the relationship between the 16 P.F. Test and Scholastic Performance, (c) the studies involving the relationship between the 16 P.F. Test and occupational success, and (d) the studies involving the 16 P.F. Test and personality traits, and other related studies.

The 16 P.F. Test consists of three equivalent forms; namely, Form A, Form B, and Form C. In terms of personality factors measured, they are the same, except that Form A and Form B each has 187 items (10 to 13 items for each factor) where Form C has only 105 items (6 to 8 items for each factor), and it is intended for use with adults. The studies involving the 16 P.F. Test have been carried out by using different forms, depending on the specific objectives of the particular investigator. In this chapter, no attention is paid to any particular form of the 16 P.F. Test, since they are parallel versions and virtually the same. Cattell (1962) declares:

The results showed good validity and confirmed that the same factors are being measured as in the A and B 16 P.F. forms. Thus, Form C, like Form A and B, tests as much of the total personality as can be covered by questionnaire (Cattell, 1962; p. 5).

The Profiles of Sixteen Personality Factor Questionnaire

Cattell and Eber (1957) administered the 16 P.F. Test to different subjects in different occupations in the hope of developing personality profiles for these occupations, for predictive use in industry, in college, and in clinic. This work was based on the assumption that the mean profile of people who have been long in an occupation (and are presumably adjusted to it) constitutes an ideal pattern for selecting new workers for that occupation. Even though we do not know how the individual factors work within the occupation it is assumed that there is an "optimum" level of each factor on each occupation. For instance, Cattell mentions that:

If the average good academic administrator falls at the seventh sten on Factor E (Dominance); it is implied that increasing dominance up to this level is good; but that beyond this level it may bring disadvantage (Cattell and Eber, 1957; p. 20).

Twenty-eight different occupations have been profiled in terms of the 16 P.F. Test: the number of subjects involved in the studies ranged from 12 to 1128 cases.

Fischer (1956), after describing the usefulness of these 16 P.F. Test profiles, concludes:

At the present time, the most serious limitation of its usefulness is the small sample included in the occupational and clinical profiles published in the handbook. It is the reviewer's opinion that while these profiles are quite suggestive, larger samples are needed before the profiles can be too heavily leaned upon in counseling (p. 411).

However, Lorr (1965), after giving some criticism, concluded that although the test manual offers incomplete validation data, there is evidence to indicate that the twenty-eight occupational profiles provided were significant

and useful.

Sixteen Personality Factor Questionnaire and Scholastic Performance

In this section, the term "Scholastic Performance" will be used in place of such terms as "Academic Performance," "School Achievement," "School Attainment," or "Scholastic Success."

Butcher, Ainsworth and Nesbitt (1963) conducted a cooperative investigation to study the "Personality Factor and School Achievement" of the British and American children, using the 16 P.F. Test as the main instrument. The American sample consisted of grade seven students (N=275) in Springfield, whose mean age was 12.7 years. The first English sample consisted of 230 children of a secondary modern school in South Manchester, with a mean age of 12.5 years. The second English sample consisted of 140 children in the third year of secondary schooling, and were referred to as the "representative British sample" with a mean age of 14.3 years. A summary of the findings is set forth below.

1. The urban American children were found to be more introverted and markedly more anxious than rural children.

2. Children at a secondary modern school in England were more introverted and very clearly more anxious than the American children.

3. No significant difference was found on the factor of extraversion or anxiety between the two cultures.

4. The American children were found to be very

significantly more sociable, less assertive and more conscientious than the English children.

5. It was found that only Factor B (Intelligence), Factor G (Conscientiousness), and Factor Q2 (Self-sufficiency) correlated fairly consistently with the school attainment.

In a study by Warburton, Butcher, and Forrest (1963), one hundred student teachers in the Department of Education, University of Manchester, were tested with measures of ability, personality (the 16 P.F. Test), interest, values and general culture. One purpose was to determine the relative efficiency of these variables in predicting success in the course of professional training. The predictive power was examined in terms of three main criteria--final teaching mark, final theory of education mark, and award of the Graduate Certificate in Education. It was found that (a) degree class was the best single predictor of theory mark and final award, (b) a personality questionnaire was the best single predictor of teaching marks, and (c) the successful student tended, apart from academic qualifications, to have a high level of general culture, high conscientiousness, to have a tender-minded attitude to education, and to participate fairly widely in social activities.

In 1966, after the idea that personality factors play an important role in scholastic success had been accepted, Rushton (1966) carried out a study in the hope of identifying and measuring the factors which lead to success or failure. His sample of 458 boys and girls, aged 10 to 11, was drawn

from fourteen county primary schools approximately representing the different socio-economic strata and school sizes in England. Teacher ratings of personality and academic ability of the subjects were obtained, as were their scores on the 16 P.F. Test and test of cognitive ability. The scores were intercorrelated: the major finding was that teacher ratings and the scores from the 16 P.F. Test were in reasonable agreement. Furthermore, it was shown that extravert children have higher scholastic attainment.

Wilson (1968) investigated the personality characteristics and study methods of both Arts and Sciences students in Australia. He found not only that the students who failed at the end of the first year tended to be "unstable extraverts," but that these students admitted to poor note-taking during lectures.

In 1969, the relationship between the personality and academic achievement of student teachers was studied again. Davis and Satterly (1969) administered the 16 P.F. Test to 149 female student teachers at Homerton College (England) at the time of entry and 26 months later, prior to their final teaching practice. Students who scored "high" and "low" in teaching ability were identified and their personality profiles compared. It was found that four factors, namely, Factor G (conscientiousness), and Factor I (tough-mindedness), Factor O (confidence), and Factor Q4 (relaxed behavior), significantly differentiated between the groups. This was the case on both test occasions (i.e., first and

second test). Factor M (practicality) differentiated on the first occasion but not the second. A two-way analysis of variance on all possible pairs of factors revealed fifteen interactions significant at the .01 level. The findings in this investigation suggest that particularly poor performances were encountered where tendermindedness (Factor I), high insecurity (Factor O), and tenseness (Factor Q4), respectively, are associated with the lack of conscientiousness (Factor G). This confirms the finding by Warburton, et al. (1963) in which they concluded that . . . the successful students tended to have . . . high conscientiousness (Factor G).

Sixteen Personality Factor Questionnaire and Occupational Success

Many studies have been carried out to determine the relationship between personality traits and success in various occupations. A substantial number of the studies have been done using the 16 P.F. Test as the tool of research. Some of the studies were carried out in the field of teaching.

Lamke (1951) studied personality in relation to success in teaching with the hope of determining whether there were characteristic personality differences between "good teachers" and "poor teachers." Lamke found that good teachers were above average and poor teachers were below average on Factor F (surgency vs. desurgency) and Factor H (shy vs. venturesome). Concerning this finding Lamke stated:

Using Cattell's terminology for source trait F, the good teachers are more than usually talkative, cheerful,

placid, frank, and quick; whereas the poor teachers are below average in these respects

For the source trait H, the good teachers are above average in their tendencies to be gregarious, adventurous, frivolous, to have abundant emotional responses, strong artistic tendencies, and to be interested in the opposite sex. The poor teachers are below average in these respects (Lamke, 1951; p. 243).

Lamke's good teachers also were average or slightly below average on Factor N (forthright vs. shrewd), while the poor teachers are far below on this trait. In this regard, he stated that:

Good teachers are approximately average in their tendencies to be polished, fastidious and cool, while poor teachers are definitely below average in these respects (Lamke, 1951; p. 243).

However, he concluded that there were probably several patterns of responses for the good teachers and several for the poor teachers.

A sample of sixty-four teachers engaged in their second year of teaching in Wisconsin High Schools was employed in a study by Erickson (1954). He tried to develop equations for the prediction of teacher success using minimum number of variables which functioned with maximum stability. The technique of factor analysis was employed on a variety of measures of the temperament, personality, and achievement in teaching. The scores on parts of the 16 P.F. Test were correlated with nine different measures of teaching effectiveness. These were derived from: (a) the principal's acceptability rating, (b) the principal's rating (first year) on the Wisconsin Adaptation of the M-blank, (c) and (d) a supervisor's rating, (e) the principal's rating (second year),

(f) the rating obtained from an outside agency, (g) teacher's self evaluation, (h) peer evaluation, and (i) pupil evaluation. It was found that, of 144 correlation coefficients, only 14 reached the 0.05 level of significance. Only Factor G (expedient vs. conscientious), Factor M (practical vs. imaginative), Factor O (placid vs. apprehensive), and Factor Q3 (undisciplined self-conflict vs. controlled) yielded significant correlations with at least two of the nine effectiveness criteria. After analyzing his data, Erickson concluded:

The low correlation of the several temperament, personality, and achievement variables with nine estimates of teaching success seems to indicate that the relationship of these measures to teaching success as here measured has not been definitely established (Erickson, 1954; p. 36).

In a study that partially confirmed and partially contradicted the findings reported above, Hadley (1954) administered the 16 P.F. Test to the entire graduating class at a state teachers' college in Pennsylvania. He then compared students who received a practical teaching grade of "A" with those whose grade was "C". Three of the 16 factor scores discriminated between the two groups at the 0.05 level. Students who received an "A" grade, compared with those who received a "C", were more likely to be low on Factor F (sober vs. happy-go-lucky), and high on Factor G (expedient vs. conscientious). The former finding contradicts, and the latter confirms, the findings of Lamke (1951) as reported earlier. In addition, the "A" students were low on Factor N (forthright vs. shrewd). For the total sample the three

Factors, F, G, and N had correlations of 0.33, 0.32, and 0.27, respectively, with student marks.

It is interesting that Cattell himself has modified his original expectation that teachers would be high in Surgency rather than Desurgency.* In commenting on Hadley's findings, Cattell stated:

Hadley . . . found in student teachers that those with A grades were more Desurgent . . . than those with C grades, presumably due to press of misdirected talk in the latter (Cattell, 1957; p. 187).

In a study by Montross (1954) a sample of thirty-five high school teachers, graduates of the University of Wisconsin who were teaching, was used to find a possible relation between temperament and teaching success. The scores obtained on the 16 P.F. Test were correlated with the ratings of success in teaching, and Montross found that only Factor A (reserved vs. outgoing) correlated significantly with this rating of teacher success. This led him to conclude that:

". . . The sixteen P.F. Test seemingly fails to identify aspects of temperamental behavior which are related to success in teaching as measured in this investigation." (Montross, 1954; p.96)

Tarpey (1965), in a study, found that the general personality pattern of student teachers in England was normal, and she also found that significant correlations between personality factors and teaching marks occurred only on Factor A, Factor H, Factor G, Factor M, Factor I, Factor N, and Factor Q3.

*"Surgency vs. Desurgency" and "Sober vs. Happy-go-lucky" are used interchangeably.

It should be noted that the correlation of teaching marks with Factor G confirmed the study by Hadley (1954), the correlation of teaching marks and Factor M confirmed the study by Cattell and Drevdahl (1958), and the correlation with Factor I supported Warburton, et al. (1963).

In a study carried out in England, Start (1966) administered the 16 P.F. Test to the staff of a mixed, secondary modern school in Lancashire. The scores were correlated with teaching ability as rated by the head teacher. It appeared that the best teachers differed from the rest on Factor A-, B+, E+, L-, M+, Q1-, and Q3-. The best teachers appeared to be reserved, easy to get on with, conservative and casual. They also tended to be bright, independent, and imaginative. As teaching ability appears to be linked with sex, it was found that only Factor L, and Factor M correlated significantly with teaching ability.

Start (1968) conducted a similar study, again in England, in which the members of the staff of an English Secondary modern school (N=39) were asked to complete a battery of tests, one of which was the 16 P.F. Test. The head teacher completed the test battery and in addition rated each assistant teacher on nine aspects of teaching competence. These were: teaching ability, relations with colleagues, class control, relations with parents, administrative ability, relations with children, intelligence, extra-mural contributions, and relations with the head teacher. It was found that these ratings were highly

intercorrelated. It also appeared that teachers with profiles very similar to, or very different from that of the head teacher, usually had higher ratings for teaching ability and for social competence. The teachers with the lowest ratings had a tougher, self-confident unconventionality which would tend to make them independent of the head teacher.

With the conviction that personality characteristics rather than academic skills account for the success or failure of psychiatric nurses in a mental hospital, Shotwell and Cattell (1954) carried out a study for the purpose of determining to what extent the 16 P.F. Test differentiates between successful and less successful aides in a hospital for mental defectives. The study was carried out in the hope that if any significant differences between two such groups could be demonstrated, the predictive value of the test could then be determined. The test could then be utilized to advantage in the selection of psychiatric aides. The tests were given to 105 subjects at Pacific Colony, a California State Hospital for mental defectives. It was found that the more successful aides were emotionally stable, less dominant, less eccentric, more conservative, less anxious, and endowed with more will control. However, only emotional maturity, super-ego strength, and radicalism were found to be statistically significant.

Sixteen Personality Factor Questionnaire and Personality Traits

Since development of 16 P.F. Test by Cattell, a number

of investigations have been carried out to study personality patterns of different groups of people. The general purpose of the studies was to learn which of the personality traits, determined by the 16 P.F. Test, distinguished different groups of people.

Wright (1954), in his thesis, administered the 16 P.F. Test to a sample of students in order to distinguish those of equal intelligence but higher scholastic achievement from those of lower achievement. He found the former group scored higher (significant at the 0.05 level) in Schizothymia (Factor A), withdrawn Schizothymia (Factor H), ego-strength (Factor C), absence of free-floating anxiety (Factor O), and somatic anxiety (Factor Q4).

Drevdahl (1954) compared the scores on the 16 P.F. of "creative" and "non-creative" students in science and arts. His major finding was that "creative" students were significantly more schizothymic (Factor A), self-sufficient (Factor Q2), withdrawn Schizothymic (Factor H), sophisticated (Factor N), desurgent (Factor F), and radical (Factor Q1).

Cattell and Drevdahl (1955), in their study of the personality profile of the typical research worker in relation to that of the average adult and other occupations, compared the scores obtained on the 16 P.F. Test by the biologists, physicists, and psychologists. Each group contained administrators, teachers, and research workers. Their findings were:

1. The outstanding professional, academic scientists

differed from the general population in Factor B (intelligence), Factor C (ego-strength), Factor E (dominance), Factor F (desurgency), Factor G (lack of group super-ego standards), Factor H (adventurousness), Factor I (sensitive emotionality), Factor L (lack of paranoia), Factor O (lack of free-floating anxiety), and Factor Q3 (will-control).

2. The outstanding professional, academic scientists differed from the university undergraduate population by being more Schizothymic (Factor A), self-sufficient (Factor Q2), intelligent (Factor B), desurgent (Factor F), withdrawn Schizothymic (Factor H), radical (Factor Q1), and paranoid (Factor L), and of higher somatic anxiety (Factor Q4).

3. Research workers, relative to teachers or administrators, were more Schizothymic (Factor A), self-sufficient (Factor Q2), emotionally unstable (Factor C), imaginative (Factor M), paranoid (Factor L), withdrawn Schizothymic (Factor H), and lower on compulsive super-ego or will-control (Factor Q3).

These findings confirmed the results obtained by Drevdahl (1954), and Wright (1954) reported earlier.

Drevdahl (1956) also investigated some relationships between certain objectives measured by intellectual and personality characteristics and the ratings of creativity in a population of advanced undergraduate and graduate students at the University of Nebraska. His major findings in the area of personality characteristics were:

1. Creative persons appear to be superior to

non-creative persons in verbal facility, fluency, flexibility, and in originality.

2. Creative persons appeared to be considerably more withdrawn and quiescent than non-creative persons. Creative artists were somewhat more radical and self-sufficient than creative scientists.

3. Apart from being classified as creative or non-creative, the art group seems to be more sensitive emotionally, and more bohemian.

4. Individuality or non-conformity appears to be desirable for creativity.

Drevdahl and Cattell (1958) administered the 16 P.F. Test to 153 artists and writers to obtain personality profiles of creative persons as compared with the normal population. The scores obtained on the 16 P.F. Test were compared and it was found that creative artists and writers differed from the normal population in being more intelligent, emotionally mature, dominant, adventurous, emotionally sensitive, imaginative radical, self-sufficient, and of a high ergic tension level. They were also less outgoing, enthusiastic, and subject to group standard and control. The experimental population was similar to the creative scientist population (Cattell and Drevdahl, 1955) in ten of sixteen factors measured by the 16 P.F. Test.

Anderson (1960a) conducted an investigation to study the personality characteristics of students entering the University of Western Australia. His major findings were:

1. Male students from the State Government Schools were significantly higher than males from private schools in intelligence (Factor B), radicalism (Factor Q1), and self-sufficiency (Factor Q2). They were significantly lower in surgency (Factor F), sensitivity (Factor I), and guilt-proneness (Factor O). The male students from the State Government Schools were also significantly less adventurous (Factor H), but scored higher for self-sentiment formation (Factor Q3).

2. The State female students scored significantly higher than students from private schools in intelligence (Factor B), sensitivity (Factor I), and radicalism (Factor Q1), and also in Factor H. The state female students were significantly lower in paranoid tendency (Factor L), and ergic tension.

Anderson admitted that it was not so easy to generalize the scores from each factor in terms of personality terms. As he says: "It is difficult, perhaps dangerous, to generalize (these scores) in personality terms" (Anderson, 1960a; p. 125). However, his study concluded that the state male students tended to show slightly more dynamic integration, were more introverted and more schizothymic, while the state female students showed more dynamic integration and more extraversion, more cyclothymia and less frustration than the students from private schools.

Anderson (1960b) also found in terms of Cattell's

second-order factors that (a) the male Humanity group (Arts, Education, Economics and Law) was typical of the cyclothymic constitution and the pattern shown tended to differ from the Sciences group (Sciences, Engineering, Agriculture, Medicine, and Dental Sciences); (b) Humanity entrants as a group were more extraverted than the Sciences group; and (c) the total male group appeared to be less cyclothymic than the female group, and possibly showed a tendency towards less frustration.

Cattell and Warburton (1961) administered the 16 P.F. Test to 604 and 204 American and English students. They found that the form of anxiety and extraversion-introversion patterns of the two cultures were similar. However, some of the differences were: (a) In terms of second-order factors, the American students were found to be at a significantly higher level of anxiety than the British students, and also were more extraverted, (b) The British group showed significantly higher ego strength (Factor C) and self sentiment development (Factor Q3), while the American group showed higher super ego development, both in terms of guilt proneness (Factor O) and strength of the learned socio-moral pattern (Factor G), (c) There were also some indications that the British University students were, in terms of second-order factors, more emotionally sensitive and more radical than the American University students.

Cross, Cattell and Butcher (1967) administered the 16 P.F. Test to 63 visual artists and 28 craft students, and

their scores were compared with the normal group. It was found that the significant differences in mean scores between artists and normal group were found on twelve factors of the 16 P.F. Test. The artists' personalities appeared to be reserved (A-), dominant (E+), self-sufficient (Q2+); they were low in emotional stability (C-), low in self-integration (Q3-), high in artistic or bohemian tendency (M+), and with low super ego strength (G-). They also differed from the normal group in being more suspicious (L+), more apprehensive (O+), and more tense (Q4+). In terms of the second-order factors, the artists were assessed as being slightly introverted. There was also evidence of some contradiction; the group appeared to be strongly anxious, experimenting, non-moralistic, and sensitive.

If artists are to be considered "Creative persons," as indeed they must, the findings of Cattell, et al., (1967) confirmed the study by Drevdahl (1956).

A more recent study using the 16 P.F. Test was carried out by Bachtold and Werner (1970). Their purpose was to obtain a personality profile of academic women in psychology in order to compare (1) with the general female population, (2) with college women, (3) with successful academic men, as described by Cattell and Drevdahl (1955), (4) with the psychologists among the academic men, and (5) to determine differences in the women's profiles in relation to their area of vocational interest, productivity, and major activity. The subjects of the study were 124 women with a doctoral

degree, born in 1910 or earlier. Their major findings were:

1. As a group, the gifted women psychologists tended to be more intelligent, socially aloof, dominant, serious, adventuresome, sensitive, flexible, imaginative, insightful, unconventional, secure, and self-sufficient than adult women in the general population and women in college. They tended to be significantly more emotionally mature and controlled than women college students.

2. In the case of women psychologists, the group was very homogeneous, there being many more similarities than differences in personality factors. Differences were found significantly on Factors A, H, O, Q2, and Q4.

3. Women psychologists were higher than the successful academic men on intelligence, super-ego strength, unconventionality (radicalism), and lower than the academic men on self-sentiment.

4. The development women psychologists contained the greatest proportion of significant contributors to the scientific literature. The counseling and guidance psychologists were more "social action and people oriented." The clinical psychologists had more conflicting and less secure personality profiles, and the college teachers were more productive and more often shared their professional time between teaching and other activities.

Cattell and Morony (1962), in their attempt to use the 16 P.F. Test in distinguishing homosexual, normal and general criminals, found that the homosexual criminals

differed significantly from the normals, as a whole, in every personality trait. Moreover, the homosexuals differed from the neurotics by being more extraverted, lower in guilt-proneness and super ego-strength, somewhat more weak on the fundamental ego strength factor, and more radical in social outlook.

Horn and Morrison (1965) reported a factor-analytic study of the Minnesota Teacher Attitude Inventory. They identified five factors which the authors labelled:

1. Traditionalistic vs. modern beliefs about child control,
2. Unfavorable vs. favorable opinions about children,
3. Punitive intolerance vs. permissive tolerance for child misbehavior,
4. Aloof vs. involved attitudes towards children,
5. Laissez-faire vs. controlling attitudes towards children.

Morrison and Romoser (1966) used factor analysis to investigate the relationship of the "Traditionalistic" scale in the realm of primary personality traits as measured by the 16 P.F. Test. The sample used was naive, i.e., had not taken any of the series of professional education courses. They reported a correlation between Factors A (reserved), I (tough-minded), and L (suspicious) with the Horn-Morrison "Tradionalistic" scale.

Again, Morrison and Romoser (1967) investigated the relationship of each of the five Horn-Morrison scales to those

of the 16 P.F. Test, using a more heterogeneous sample. They found that the Horn-Morrison scales were significantly correlated with the second-order factors of the 16 P.F. Test but only with independence ($r=0.20$), and creativity ($r=0.22$). Morrison and Romoser (1967) also found seven second-order factors on the 16 P.F. Test. These were labelled: anxiety, extraversion, tough poise, independence, neuroticism, leadership, and creativity.

Ley, et al., (1966) hypothesized that there would be a negative correlation between tests of intelligence and measures of extraversion. The finding not only failed to support their hypothesis but, the correlation between extraversion and intelligence was significantly positive.

To conclude: four areas of related studies have been surveyed, namely; the profiles derived from the 16 P.F. scale of different occupations, the relation between the 16 P.F. Test and scholastic performance, the relation between the 16 P.F. Test and occupational success, and the personality traits of various groups of subjects as described by the 16 P.F. Test. Although, in some aspects the results do not confirm each other, the findings are useful and interesting. In view of the studies reported, it might be concluded that the 16 P.F. Test was considered useful for predicting occupational and academic success. Thus it is probable that the instrument might be of value in selecting teacher trainees.

CHAPTER III

DESIGN OF THE INVESTIGATION

Description of the Subjects

The subjects of this study were Thai students at The University of Alberta working in various faculties towards Graduate Diplomas, Master's Degrees, or Doctoral Degrees. They were chosen as subjects because they were considered to be sufficiently proficient in both the English and Thai languages to understand both versions of the test. This was considered a pre-requisite because each subject was to be tested twice--once with the English version, and once with the Thai version.

It was found that the 54 students who met the language requirement were willing to cooperate. Of the fifty-four subjects, twenty-nine (53.7%) were males and twenty-five (46.3%) were females. Their ages ranged from 23 to 46; all of them were Buddhists. The subjects could be classified in three groups, represented in TABLE I.

Description of the Test Instrument

The instrument chosen for translation and study, the Sixteen Personality Factor Questionnaire--Form C, was designed to measure the major dimensions of personality, revealed by the factor analysis. The authors (Cattell and Eber, 1957) stated that the 16 P.F. Test was

TABLE I
NUMBER OF SUBJECTS

Groups	Male	Female	Total
Graduate Diploma in Education*	17	8	25 (46.3%)
Masters' Degree	10	15	25 (46.3%)
Others	2	2	4 (7.4%)
Total	29 (53.7%)	25 (46.3%)	54 (100.0%)

* See Appendix C

not concerned with some narrow concept of neuroticism or adjustment, but attempted to cover all the dimensions along which people differ, so as to provide the fullest information in the shortest time. The questionnaire was based on an extensive program of research carried out by R. B. Cattell over a number of years.

The 16 P.F. Test differs from other factorially structured questionnaire in that relatively neutral labels have been assigned to many of the factors. This avoids, to some extent, the use of value laden terms often associated with the description of personality traits. The handbook of the 16 P.F. Test describes the sixteen factors in terms of their bipolar dimensionality, as shown in TABLE II.

The authors of the test claim that: (a) the sixteen factors are the main dimensions that had been found both necessary and adequate to cover all kinds of individual differences in personality, (b) the factors are independent of one another, and (c) the factors are important in that each has a wide area of influence on behaviour.

In terms of the personality factors measured, Cattell (1962) states that:

Form C is exactly parallel to Form A and B. An extensive factor analysis, originally based on many hundreds of new questions, was carried out. It aimed to give the maximum reliability and validity of measurement possible with only six items per factor. The results showed good validity and confirmed that the same factors are being measured as in the A and B 16 P.F. forms. Thus Form C, like Form A and B, tests as much of the total personality as can be covered by questionnaire, according to the most up-to-date psychological research (Cattell, 1962; p. 5).

TABLE II

DESCRIPTIONS OF TRAITS MEASURED BY THE SIXTEEN
PERSONALITY FACTOR QUESTIONNAIRE

LOW SCORE DESCRIPTION	FACTOR	HIGH SCORE DESCRIPTION
RESERVED , DETACHED, CRITICAL, ALOOF (Sizothymia)	A	OUTGOING , WARMHEARTED, EASY- GOING, PARTICIPATING (Affectothymia, formerly cyclothymia)
LESS INTELLIGENT , CONCRETE- THINKING (Lower scholastic mental capacity)	B	MORE INTELLIGENT , ABSTRACT- THINKING, BRIGHT (Higher scholastic mental capacity)
AFFECTED BY FEELINGS , EMOTIONAL- LY LESS STABLE, EASILY UPSET (Lower ego strength)	C	EMOTIONALLY STABLE , FACES REALITY, CALM, MATURE (Higher ego strength)
HUMBLE , MILD, ACCOMMODATING, CONFORMING (Submissiveness)	E	ASSERTIVE , AGGRESSIVE, STUBBORN, COMPETITIVE (Dominance)
SOBER , PRUDENT, SERIOUS, TACITURN (Desurgency)	F	HAPPY-GO-LUCKY , IMPULSIVELY LIVELY, GAY, ENTHUSIASTIC (Surgency)
EXPEDIENT , DISREGARDS RULES, FEELS FEW OBLIGATIONS (Weaker superego strength)	G	CONSCIENTIOUS , PERSEVERING, STAIID, MORALISTIC (Stronger superego strength)
SHY , RESTRAINED, TIMID, THREAT-SENSITIVE (Threctia)	H	VENTURESOME , SOCIALLY BOLD, UNINHIBITED, SPONTANEOUS (Parmia)
TOUGH-MINDED , SELF-RELIANT, REALISTIC, NO-NONSENSE (Harria)	I	TENDER-MINDED , CLINGING, OVER-PROTECTED, SENSITIVE (Premsia)
TRUSTING , ADAPTABLE, FREE OF JEALOUSY, EASY TO GET ALONG WITH (Alaxia)	L	SUSPICIOUS , SELF-OPINIONATED, HARD TO FOOL (Protension)
PRACTICAL , CAREFUL, CONVENTION- AL, REGULATED BY EXTERNAL REALITIES, PROPER (Praxernia)	M	IMAGINATIVE , WRAPPED UP IN INNER URGENCIES, CARELESS OF PRACTICAL (Autia) MATTERS, BOHEMIAN
FORTHRIGHT , NATURAL, ARTLESS, UNPRETENTIOUS (Artlessness)	N	SHREWD , CALCULATING, WORLDLY, PENETRATING (Shrewdness)
SELF-ASSURED , CONFIDENT, SERENE (Untroubled adequacy)	O	APPREHENSIVE , SELF-REPROACHING, WORRYING, TROUBLED (Guilt proneness)
CONSERVATIVE , RESPECTING ESTAB- LISHED IDEAS, TOLERANT OF TRADI- TIONAL DIFFICULTIES (Conservatism)	Q ₁	EXPERIMENTING , LIBERAL, ANALYTICAL, FREE-THINKING (Radicalism)
GROUP-DEPENDENT , A "JOINER" AND SOUND FOLLOWER (Group adherence)	Q ₂	SELF-SUFFICIENT , PREFERS OWN DECISIONS, RESOURCEFUL (Self-sufficiency)
UNDISCIPLINED SELF-CONFLICT , FOL- LWS OWN URGES, CARELESS OF PROTOCOL (Low integration)	Q ₃	CONTROLLED , SOCIALLY PRECISE, FOLLOWING SELF-IMAGE (High self-concept control)
RELAXED , TRANQUIL, UNFRUSTRATED (Low ergic tension)	Q ₄	TENSE , FRUSTRATED, DRIVEN, OVERWROUGHT (High ergic tension)

The test was composed of 105 items in total. Six items were set up for each of the sixteen factors except for Factor B (general intelligence) where eight items were used. To the 98 items thus constituted were added seven motivational distortion items (the M.D. Scale). The items were arranged in a roughly cyclic order, determined by a plan to give maximum convenience in scoring by cardboard stencil keys. Each of the 105 items was answered, according to the subjects' preferences, on the answer sheet attached at the end of the test.

Most of the questions were designed by Cattell to be as free as possible of "value" implications, so that the person would not be tempted to answer in a particular direction for the sake of social approval. But, for those items on which this might fail, the Motivational Distortion (M.D.) scale had been introduced. This consisted of seven questions selected on the basis of a special study as showing the maximum change of score when the same persons were switched from a secure, non-motivationally distorting to the opposite type of situation. The score on these seven items might be considered a measure of the subject's need and willingness to distort in the interests of social approval. It is a kind of "lie" scale.

The internal validity of the test was revealed to be of primary concern of the author when he stated that:

The items are chosen as being good measures of the factors as shown by factor analysis. The mean correlation of all single items with the factors they represent is +0.37, and the mean correlation of each

group of six items with the factor it represents is about +0.71, which is decidedly high for so brief a test (Cattell, 1962; p. 7).

Cattell also states that "external validity," i.e., correlation with an outside criterion, could not meaningfully be calculated, since such a test is capable of being related to great numbers of different criteria. This argument seems rather specious.

The reliability of the test has been worked out by Cattell as a test-retest correlation with a one-week interval between the application of the test. The values of reliability coefficients, as reported by Cattell (1962), of the factors as measured on a population of two hundred students are reproduced in TABLE III. Some of the reliabilities are quite low. According to Cattell:

Some of these are not high, but their departure from unity, . . . , covers "function-fluctuation," i.e., real changes in level of traits over time as well as test unreliability. Whenever higher reliability is more important than the increased demand on testing time, it can be raised by lengthening the test, adding the A and B forms. Reliabilities will then range in the +0.75 to +0.90 area for each of the sixteen factor-scales (Cattell, 1962; p. 7).

The 16 P.F. Test had been criticized (Lorr, 1965) in that there was some doubt about the purity of the sixteen factors, and more research was needed regarding the construct validity of individual factor scales.

However, Lorr (1965) concluded that the test had been found a success, having had substantial acceptance, and it appeared to be the best factor-based personality inventory available. Kleinmuntz (1967) ended his evaluative comments

TABLE III
RELIABILITIES OF THE 16 P.F. TEST
(N=200)

Factors	Reliabilities
A	0.54
B	0.57
C	0.47
E	0.42
F	0.50
G	0.41
H	0.61
I	0.55
L	0.45
M	0.39
N	0.41
O	0.32
Q1	0.71
Q2	0.45
Q3	0.52
Q4	0.55

with a similar remark, thus:

It has potential for practical application and is worthy of serious further attention and research. Considering the skill and almost boundless energy of R. B. Cattell and his associates at the laboratories of the Institute for Personality and Ability Testing (IPAT), such research will certainly be forthcoming in the near future (Kleinmuntz, 1967; p. 201).

Translation of the 16 P.F. Test into Thai

In order that the translated test might reflect the original as closely as possible, the following steps were undertaken:

1. Consulting with experts about the meaning of the difficult items and terms,
2. Basic translation,
3. Consulting with people who understood both English and Thai regarding the wording of the translation, and
4. Final revision of translation (See Appendix A).

Special care was taken that the most important aspects of the original (English version) remained unchanged in the Thai version; i.e., name of the test, the directions, the number of the test items, and the order of the items.

Collection of Data

The data were collected during the summer session 1970, at the University of Alberta. The subjects were first randomly divided into two groups of 27. Next, the tests were administered in the following manner--the first group of subjects was given the English version, and the second group was given the Thai version of the 16 P.F. Test. Within a

period of 7 days, the subjects were tested again. The procedure in testing was the same, except that the first group was now given the Thai version, the second group being given the English version. Each group was thus administered the same two tests, but in different order. This was done to eliminate any effect that might result from order of testing. The diagram illustrating the procedure of testing is given in FIGURE I.

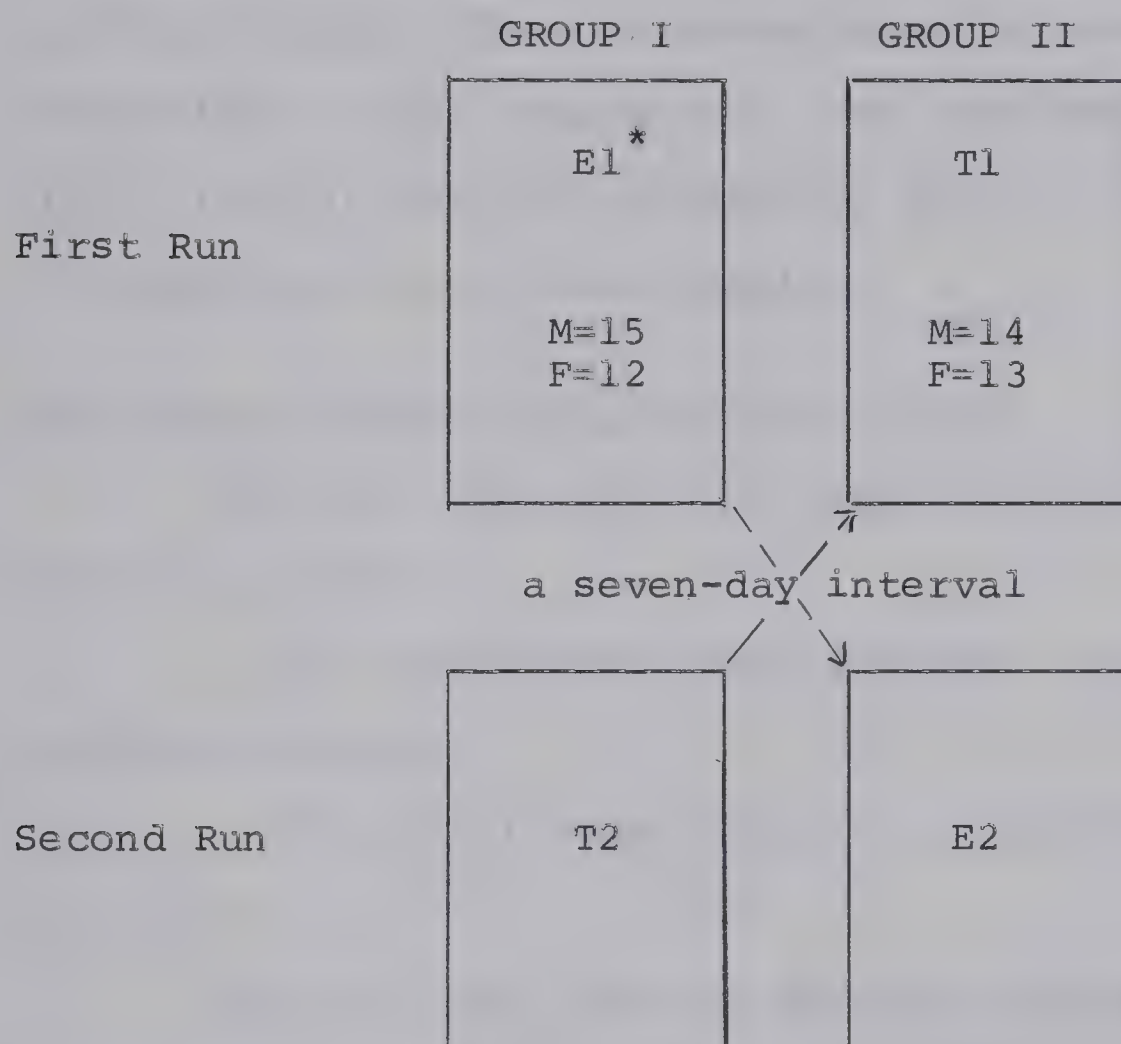
Scoring of the Test Items

Each item of the 16 P.F. Test is given a score of 0, 1, or 2 points, except for Factor B (general intelligence) items which score 0 (incorrect), or 1 (correct). Each item scored contributes to only one factor; i.e., in other words, no item appears in more than one factor. Otherwise, spurious correlations would be obtained between these factors.

Scoring is accomplished by using two cardboard stencil scoring keys. One is used properly for Factors A, C, F, H, L, N, Q1, and Q3, the other for Factors B, E, G, I, M, O, Q2, and Q4, and M.D. Each factor is scored by adjusting the stencil over the answer sheet and counting the pencil marks visible through the holes allowing 1 for responses appearing through holes so marked and 2 for those so designated. The score is entered as a raw score for each factor on the respondent's answer sheet. The process is the same for stencils 1 and 2. The scoring stencil for Factor B has holes to indicate a score of 1 only.

FIGURE I

TESTING PROCEDURE



*
 E= English version
 T= Thai version
 --> = The manner in which
 the data were combined

The estimation of scores is thus routine for all factors including the M.D. scale. This scale is a means of determining whether or not the experimenter is getting good cooperation.

It is not essential to convert these raw scores into standard scores. The raw scores equally describe the personality of the respondents, and have been used in this study since it was not intended to make any interpretation on comparisons with other samples.

The English Version and the Thai Version

The data from test and retest were combined in the following manner:

1. E1 and E2 were combined under the general heading "English Version."
2. T2 and T1 were combined and labelled "Thai Version."

Data for each version were collected from the same 54 subjects. The method of combining the data is illustrated in FIGURE II.

Statistical Hypotheses

The following hypotheses were proposed for testing in the present study:

Hypothesis I: There are no significant differences between the means of scores for the corresponding factors obtained from the English version and the Thai version.

FIGURE II

THE ENGLISH VERSION VS. THE THAI VERSION

THE ENGLISH VERSION

Subjects	Factors				
	1	2	3	....	16
1 2 . . . 27				first run (E1)	
28 29 . . . 54				second run (E2)	
Mean	\bar{X}_{E1}	\bar{X}_{E2}	\bar{X}_{E3}	.....	\bar{X}_{E16}
Variance	S^2_{E1}	S^2_{E2}	S^2_{E3}	.....	S^2_{E16}

THE THAI VERSION

Subjects	Factors				
	1	2	3	....	16
1 2 . . . 27				second run (T2)	
28 29 . . . 54				first run (T1)	
Mean	\bar{X}_{T1}	\bar{X}_{T2}	\bar{X}_{T3}	.....	\bar{X}_{T16}
Variance	S^2_{T1}	S^2_{T2}	S^2_{T3}	.....	S^2_{T16}

Statistically, the null hypothesis is:

$$H_0: \mu_{Ei} = \mu_{Ti}$$

where μ_{Ei} and μ_{Ti} are the population means of the English and Thai versions, and i runs from 1 to 16; i.e., from Factor A to Factor Q4.

Hypothesis II: There are no significant differences between the variances of the scores on the corresponding factors obtained from the English and Thai versions. Specifically, the null hypothesis is:

$$H_0: \sigma_{Ei}^2 = \sigma_{Ti}^2$$

where σ_{Ei}^2 and σ_{Ti}^2 are the population variances of the English and Thai versions of the 16 P.F. Test, and i goes from 1 to 16; i.e., from Factor A to Factor Q4.

Statistical Analysis

The following statistical tests were carried out:

1. Significance of differences between means of scores on corresponding factors obtained from the English and Thai versions of the 16 P.F. Test (Ferguson, 1966; pp. 169-171), and

2. Significance of differences between variances of scores on corresponding factors obtained from the English and Thai versions of the 16 P.F. Test (Ferguson, 1966; pp. 183-184).

In both cases, ANOV12, the t-test for correlated samples which is available at the Division of Educational Research Services, The University of Alberta, was used.

The program, which is shown in "Program Documentation 360/67," provides the following statistics:

- a. Mean and standard deviation of each factor,
- b. Correlation coefficients between the corresponding factors of the English and Thai versions,
- c. The values of "t" for differences between variances of the corresponding factors from both versions,
- d. The values of p (probability) for each "t" obtained in (c),
- e. The values of "t" for differences between means of the corresponding factors from both versions, and
- f. The values of p (probability) for each "t" obtained in (e).

The level of significance, in both cases, was set at the 0.05 level; that is, if the observed probability is less than 0.05, the null hypothesis (H_0) will be rejected. Otherwise, it will be retained.

CHAPTER IV

RESULTS OF THE STUDY

This chapter presents the results of the investigation, i.e., (a) test of significance for means, (b) test of significance for variances, (c) test of significance of correlation coefficients between the two versions, (d) the trace for the inconsistency of the responses of the two versions, and (e) the improvement of the wordings used in the Thai version.

Means and Variance of Each Version

The mean and variance of each of the sixteen factors for each version of the test were calculated. These statistics are presented in TABLE IV. These figures indicate that the means of the English version ranged from 3.89 to 7.00, and from 3.74 to 7.32 for the Thai version. The variances of both versions ranged from 1.80 to 4.12, and 1.56 to 4.00, respectively. However, these figures are of no particular importance, since, the means and variances of different factors are not comparable. It is of interest to note, however, that the total means and variances of the two versions were very close, 6.01 and 5.99 for the means, and 2.91 and 2.65 for variances. The close relationship of the means of the two versions is clearly demonstrated in FIGURE III. The significance of the differences between different factors is reported in TABLE V. The raw score data are shown in Appendix D and E, respectively.

TABLE IV

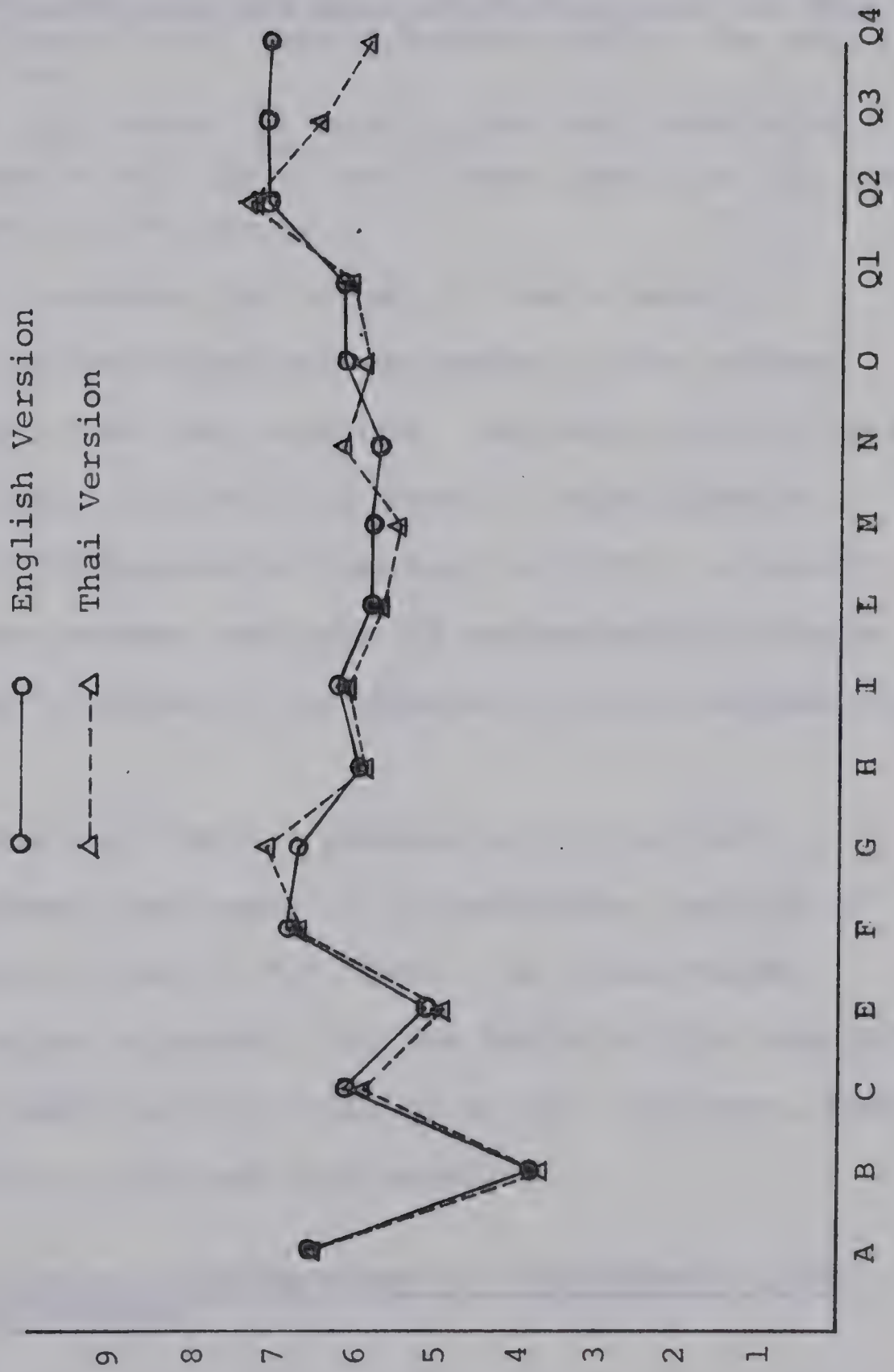
MEANS AND VARIANCES OF THE ENGLISH AND THAI VERSIONS

(N=54)

FACTORS	Means		Variances	
	English	Thai	English	Thai
Factor A	6.52	6.50	2.32	3.03
Factor B	3.89	3.74	1.80	1.56
Factor C	6.09	5.87	2.75	2.78
Factor E	5.09	4.89	3.23	2.95
Factor F	6.70	6.67	3.43	2.93
Factor G	6.70	7.15	3.02	3.31
Factor H	5.96	5.82	3.26	3.08
Factor I	6.26	6.06	4.12	3.05
Factor L	5.85	5.74	2.57	2.38
Factor M	5.85	5.59	2.13	3.61
Factor N	5.67	6.17	2.56	2.10
Factor O	6.18	5.93	2.40	1.99
Factor Q1	6.15	6.04	3.16	2.00
Factor Q2	7.00	7.32	2.67	1.92
Factor Q3	6.19	6.44	3.00	2.10
Factor Q4	6.13	5.93	3.44	4.40
Total	6.01	5.99	2.91	2.65

FIGURE III

PROFILES ON THE 16 P.F. TEST OF THE TWO VERSIONS



Test of Significance of Differences for Means of the Corresponding Factors

Hypothesis I.

It is hypothesized that there are no significant differences between the mean scores of the corresponding factors obtained from the English version and the Thai version of the 16 P.F. Test. Statistically, the null hypothesis is:

$H_0: \mu_{Ei} = \mu_{Ti}$, where μ_{Ei} and μ_{Ti} are the population means of the 16 P.F. Test, and i runs from 1 to 16, i.e., from Factor A to Factor Q4.

TABLE V presents the values of the t-tests of significance of differences between means of the corresponding factors of the two versions. As shown in this table, the critical t-ratio at the 0.05 level of significance, associated with 53 degrees of freedom, is 2.00. A significant difference between any pair of corresponding factors will be assumed to exist if the observed t-ratio exceeds or equals 2.00.

Inspection of TABLE V reveals no significant differences between the means of corresponding factors of the two versions of the 16 P.F. Test. In other words, hypothesis I is not rejected. On the basis of this analysis, it can be concluded, as the evidence so far indicates, that the two versions of the test are parallel.

Test of Significance of Differences for Variances of the Corresponding Factors

Hypothesis II.

It is hypothesized that there are no significant differences between the variances of the corresponding

TABLE V

t-TEST FOR MEANS OF THE CORRESPONDING FACTORS
BETWEEN THE ENGLISH AND THAI VERSIONS

Factors	Df.	Values of t [*]	p's
Factor A	53	0.087	0.931
Factor B	53	0.904	0.370
Factor C	53	0.925	0.359
Factor E	53	0.733	0.466
Factor F	53	0.121	0.904
Factor G	53	1.524	0.133
Factor H	53	0.641	0.524
Factor I	53	0.754	0.454
Factor L	53	0.568	0.572
Factor M	53	1.050	0.298
Factor N	53	1.743	0.087
Factor O	53	1.097	0.278
Factor Q1	53	0.421	0.675
Factor Q2	53	1.107	0.273
Factor Q3	53	1.109	0.272
Factor Q4	53	0.724	0.472

^{*}t_{.05} (df=53) = 2.00

factors obtained from the English and Thai versions of the 16 P.F. Test. Specifically, the null hypothesis is:

$H_0: \sigma_{Ei}^2 = \sigma_{Ti}^2$, where σ_{Ei}^2 and σ_{Ti}^2 are the population variances, and i goes from 1 to 16, i.e., from Factor A to Factor Q4.

TABLE VI presents the t-tests of significance of differences between variances of the corresponding factors of the two versions. The critical t-ratio, as shown in this table, at the 0.05 significance, associated with 52 degrees of freedom, is 2.00.

An inspection of TABLE VI indicates that, except in the case of Factor M, the observed t-ratios of differences between variances of the corresponding factors, are smaller than the critical value. The hypothesis that there are no significant differences between variances of the corresponding factors is not rejected, despite the figures for Factor M. The fact that one t-test (Factor M) indicates a significant difference in variances is not alarming; rather this may be expected to occur by chance.

It was concluded, therefore, that the tests of significance between the variances of the 16 factors did not indicate that the English version and the Thai version of the 16 P.F. Test were different.

Correlations Between the Corresponding Factors Obtained from the English and Thai Versions

The correlation coefficients between the corresponding factors of the two versions (i.e., between Factor A and Factor A, Factor B and Factor B, etc.) are reported in

TABLE VI

t-TEST FOR VARIANCES OF THE CORRESPONDING FACTORS
BETWEEN THE ENGLISH AND THAI VERSIONS

Factors	df.	Values of t [*]	p's
Factor A	52	1.154	0.254
Factor B	52	0.632	0.530
Factor C	52	0.042	0.967
Factor E	52	0.349	0.728
Factor F	52	0.589	0.558
Factor G	52	0.343	0.733
Factor H	52	0.248	0.805
Factor I	52	1.225	0.226
Factor L	52	0.350	0.728
Factor M	52	2.168	0.035
Factor N	52	0.707	0.483
Factor O	52	0.733	0.467
Factor Q1	52	1.746	0.087
Factor Q2	52	1.193	0.238
Factor Q3	52	1.445	0.154
Factor Q4	52	1.001	0.321

* $t_{.05}(df.=52) = 2.00$

TABLE VII. Also, in the same table, the correlation coefficients, or, in other words, test-retest reliabilities, as obtained by Cattell (1962) were presented.

The statistics in TABLE VII reveal that the correlations between the corresponding factors, obtained from both the present study and from Cattell's study, are positive, but relatively low. Cattell (1962) attributed his low correlations partly to changes in level of traits over time as well as to test unreliability.

When tests of significance of correlations were undertaken, it was found that, except in the case of Factor F, N, and Q2, the correlation coefficients between the corresponding factors of the two versions were significant at 0.05 level, being greater than the critical value (0.27). It was concluded that the correlations, excepting for Factors F, N, and Q2, were not zero.

The Trace of Inconsistency

Since the statistics in TABLE VII indicated that the correlation coefficients between the two versions of the test for Factor F, N, and Q2, were not significant, an investigation was undertaken to determine the causes of the inconsistencies.

The method employed was first to determine the frequency of each score of the English version for Factor F, N, and Q2. These frequencies are shown in the left hand side of TABLE VIII, IX, and X. The next step was to determine how the subjects at each score level were

TABLE VII

THE CORRELATION COEFFICIENTS OF THE CORRESPONDING
FACTORS

Factors	correlation coefficients*	
	present study	Cattell's
A	0.60	0.54
B	0.58	0.57
C	0.45	0.47
E	0.34	0.42
F	0.22	0.50
G	0.29	0.41
H	0.55	0.61
I	0.47	0.55
L	0.59	0.45
M	0.45	0.39
N	0.06	0.41
O	0.42	0.32
Q1	0.29	0.71
Q2	0.07	0.45
Q3	0.44	0.52
Q4	0.47	0.55

* $r_{.05} (df.=52) = 0.27$

TABLE IX

THE DISTRIBUTION OF SCORES OF THE
THAI VERSION ON THE BASIS OF THE ENGLISH VERSION
FOR FACTOR N

English Version		Scores in the Thai Version									
Scores	f	1	2	3	4	5	6	7	8	9	10
1	1				1						
2	-										
3	3			1				1	1		
4	9				2	2	2	3			
5	9					2	3	2	2		
6	17					4	8	2	2		1
7	10					2	2	4	1		1
8	3					1		2			
9	1			1							
10	1				1						

TABLE X

THE DISTRIBUTION OF SCORES OF THE
THAI VERSION ON THE BASIS OF THE ENGLISH VERSION
FOR FACTOR Q2

[illegible]

distributed on the basis of the results of the Thai version. These distributions were also shown in TABLE VIII, IX, and X. For instance, in TABLE VIII, it was found that 13 subjects whose scores were seven for the English version (Factor F) had scores in the Thai version of 2, 5, 6, 7, and 8, respectively. Similar figures are reported in TABLE IX and TABLE X. It was evident from the three tables, that the responses of the subjects varied greatly from one test administration to another. The figures shown in these tables led to a search for reasons underlying the inconsistency of the responses, the aim of which was to determine which subjects were inconsistent and why.

Five subjects whose responses to the three factors (F, N, and Q2) were inconsistent, were asked to cooperate again, in the study. Items constituting Factors F, N, and Q2 were presented to the subjects, one at a time, and they were asked to explain the inconsistent responses.

It was noted that the inconsistency of responses, as reported by the five subjects, occurred from the following reasons:

- (1) lack of cooperation of the subjects because of pressure of work,

- (2) the problem of language in the English version, and

- (3) the wordings used in the Thai version; that is some items of the three subjects under investigation were perceived as having different meanings for the same items in

the English version.

One subject reported that when the tests were administered, he was very busy. He considered that the tests consisted of too many items, and he could not understand why he had to answer in both the English and Thai versions. Thus he set out to complete as quickly as possible, regardless of the truth of the responses. This type of response is not uncommon in this type of research.

Another subject reported that when he was given the test, he did not understand the concepts and terms used in the English version very clearly. Therefore his responses were sometimes based on guesses as to the meanings of some items.

Three of the five subjects mentioned that their inconsistencies to the items of the three factors of the two versions were caused by the wording used in the Thai version. Their comprehension of the wording used in the Thai version was slightly different in the English version. Moreover, they suggested that there were words or phrases in several items that should be given more attention. This is reported in TABLE XI.

TABLE XI indicates that items 6, 23, 40, 57, 74, and 91 constitute Factor F; items 12, 29, 46, 63, 80, and 97 make up Factor N; and items 15, 32, 49, 66, 83, and 100 make up Factor Q2. It is possible that words or phrases of each item shown in TABLE XI are the root of the trouble in the translation. It is a well known fact that

TABLE XI
KEY WORDS (OR PHRASES) OF EACH ITEM OF
FACTOR F, N, AND Q2

Factors	Words (or Phrases)	
	<u>Items</u>	
F	6	-
	23	greatly
	40	quite so well
	57	have been active
	74	any time
	91	usually
	<u>Items</u>	
N	12	a good remark
	29	-
	46	this country
	63	small rules and regulations
	80	hidden propaganda
	97	tend
	<u>Items</u>	
Q2	15	so quite alone
	32	-
	49	objectionable
	66	-
	83	impractical
	100	social issue

translating concepts or ideas from one language to another is not an easy task, especially, as in this study, when the two languages do not belong to the same family. Very often, there are words or phrases in one language for which there are no equivalents in another language.

The Improvement of the Wordings of the Thai Version

The evidence in the former sections led to the next step of the study, i.e., improvement of the wording used in the Thai version, especially for Factors F, N, and Q2. This was done in the hope that the Thai version of the 16 P.F. Test should parallel the English version as closely as possible.

Firstly, the key words or phrases found in TABLE XI of the items of Factors F, N, and Q2 were carefully studied. Finally, the final revision of wordings used for those items was made. These revisions are reported in Appendix F.

Secondly, the wording used in items besides those of Factors F, N, and Q2 were also re-examined in the hope of improving the wording used in the Thai version. It was found that there were nine additional items from various factors that needed improvement. After studying these items carefully, the final revision of these items was made. Those items and the improvement of them are reported in Appendix G.

CHAPTER V

SUMMARY OF METHODS AND FINDINGS

Purpose and Methods

The 16 P.F. Test is among the more popular inventories designed to measure personality traits. However, this particular testing instrument has been employed primarily, if not entirely, with English speaking subjects. The question arises as to whether the 16 P.F. Test, as it is presently conceived, would be of value for describing population characteristics of non-English speaking subjects. An answer to this question was sought by translating the test into Thai, the language of the subjects to be studied, then determining whether the test measured the same traits of personality after translation. This procedure was adopted because a personality inventory is required for a research project in Thailand, where the English language is not a convenient means of communication. It is therefore important to determine to what extent the Thai and the English versions of the 16 P.F. Test are equivalent forms.

Two versions of the 16 P.F. Test, one the standard English version, the other a translation into the Thai language, were given to 54 Thai students who were studying at The University of Alberta during the 1970-1971 session. The majority of these students were experienced teachers, financially supported by the "Colombo Plan" under the

Government of Canada, and studying in various departments and faculties at The University of Alberta. The subjects were considered to be proficient in both the English and Thai languages, and for this reason they were chosen as test subjects.

After collecting the data, appropriate statistical analyses were undertaken to examine the question which the study sought to answer. Since the test instrument was composed of 16 variables (or factors), the data of the 16 corresponding factors of the two versions were compared. The test of significance of the differences (i.e., the t-test) between means and variances of each of the corresponding factors of the two versions was carried out. In addition, the correlations between the two versions were investigated.

Summary of the Findings

1. The t-tests that were carried out indicated that there were no significant differences between the two versions of the 16 P.F. Test. With respect to the variances, it was concluded that the degree of similarity was satisfactory. The fact that Factor M differed could be attributed to chance. However, in view of changes that must be made on the test, no particular attention was given to this difference. If further studies indicate that the difference persists after revision of the test, steps can then be taken to remedy the matter.

2. The correlation coefficients between the

corresponding factors of the two versions were found to be rather low. Three of them (i.e., for Factors F, N, and Q2) were not significant at 0.05 level. It was found that the low correlations, or, the inconsistency of the responses between the two versions, resulted from one or more of the following reasons: (a) unwillingness of the subjects to cooperate in the study, (b) difficulty in comprehending some of the terms or concepts in the English version, and (c) actual differences in meaning of some items between the English version and the Thai version. As a result, the wording used in the Thai version of those items for Factors F, N, and Q2 was polished, and a few improvements were made in other items as well. This was done in the hope that the new Thai version of the 16 P.F. Test would parallel the English version as nearly as possible.

Implications and Significance of the Findings

The important outcomes of this study are that the task of constructing a Thai version of the 16 P.F. Test has been accomplished for 13 of the 16 factors. Furthermore, the problems underlying the inconsistencies in the other three factors have been solved, and on this basis the improvement of wording used in all items of these factors of the Thai version has been carried out. Also a few items of other factors have been polished as well.

Thus the new Thai version of the test is ready for the re-evaluation, i.e., the test may now be verified by administration to a sample similar to the sample of the

present study.

Suggestions for Further Studies

1. As was mentioned previously, the Thai version and the English version should be administered once more to a sample fluent in both languages. An analysis similar to that employed in this study could be carried out.

2. The techniques of item analysis could also be used to improve the Thai version of the test. This method could be of value once the Thai version had been demonstrated to be reasonably correlated with the English version in all factors.

3. There is a possibility that the problem of this study could have been investigated by the method of factor analysis. It might be assumed that if the tests are similar, they should produce similar factors as determined by a "factor match."

4. It is intended that the Thai version be used to study teacher trainees, therefore it is appropriate that the validation sample consist largely of people in education. This was the case in this study. However, if the Thai version is to be employed with other groups, it should first be tried out on a sample basis.

5. It would be of value to employ the technique of "backtranslation" with the revised version of the 16 P.F. Test. From this, further discrepancies between the two versions might be identified.

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APPENDIX A

১৯৪৭

โปรดตอบคำถามต่อไปนี้จากใจจริงของท่าน โดยเรียงวงกลมล้อมรอบคำตอบที่ท่านต้องการ
ขอให้ตอบด้วยความรวดเร็วอย่าเสียเวลากับข้อหนึ่งข้อใดมากเกินไป ลักษณะของคำตอบจะมี ๖ ลักษณะ
คือ + ? - , หรือ ก ? ข , หรือ ก. ข. ก., ที่ปรากฏอยู่คนทั้งเบรอนแต่ละข้อ

- + เป็นคำตอบประเภทที่ท่านเห็นด้วย รับว่าจริง หรือถูกต้อง
? เป็นคำตอบประเภทที่ท่านไม่แน่ใจ, ยังสงสัย, เป็นครึ่งคราวอยู่ในระหว่าง, หรือตัดสินใจไม่ถูก
- เป็นคำตอบประเภทที่ท่านไม่เห็นด้วย ไม่ถูก หรือไม่จริง

020070

1. ฉันขี้เกียจลุกขึ้นจากที่นอน แม้จะตื่นแล้วก็ตาม + ? -
 2. ถ้าฉันมีเวลาว่าง ฉันจะ
 ก. ฟังเพลงดี ๆ ข. อ่านนวนิยาย ก ? ข
 3. เลขที่ติดจาก 1 2 3 4 5 .. คือ

г. 6 г. 8 г. 10

สำหรับตัวอย่างข้อที่ 1 ถ้าท่านเห็นว่าคำตอบนั้นไม่ตรงกับความเป็นจริงของท่าน ก็ให้เขียนวงกลมล้อมรอบข้อที่ถูกต้อง

สำหรับตัวอย่างที่ ๑ ถ้าท่านไม่แน่ใจ หรือยังตัดสินใจไม่ถูกว่าจะทำอะไรดีระหว่างฟังเพลงกับอ่านนวนิยาย ก็ให้ท่านเขียนว.กลมล้อมรอบเครื่องหมายคำถาม

สำหรับตัวอย่างข้อที่ 3 คำตอบที่ถูกคือเลขหก ก็ให้ท่านเขียนวงกลมล้อมรอบเลขหก ดังนี้เป็นต้น

ไปพักผ่อนต่างจังหวัดแล้วกลับมาดูๆ นิด

- | | |
|---|-------|
| 1. ฉันคิดว่าความจำของฉันดีกว่าเมื่อก่อน | + ? - |
| 2. ฉันอยากจะมีชีวิตอิสระ โดยเที่ยว เหมือนนก | + ? - |
| 3. ถ้าหากกับคำ หนวกับรักคน ชาญการทวจะคู่กัน
ก. วัยรุ่น ข. นักบุญ ค. เมฆ | ก ข ค |
| 4. เมื่อฉันเห็นคนที่แต่งตัวสกปรก รุ่มร่าม ฉันรู้สึก
ก. เฉย ๆ (ยอมรับความเป็นจริงของเขา)
ข. รอยแสบ และรำคาญใจ | ก ? ข |
| 5. ฉันรู้สึกว่าการเมื่อได้อินโทรพวงแหวนรถทำอะไร ๆ ได้ดีกว่าคนอื่น | + ? - |
| 6. ในงานสังคมใครชอบที่จะเล่าเรื่องอะไรฉันก็ไม่ซักถามเขา | + ? - |
| 7. ถ้าฉันมีรายได้มากเกินกว่าความจำเป็นที่จะใช้ในชีวิตประจำวัน ฉันจะบริจาคได้ส่วนเกินนั้นให้กับวัด
หรือบริจาคเพื่อการกุศลอื่น ๆ | + ? - |
| 8. เมื่อไปในงานสังคม ฉันรู้สึกว่าคนตายนม ออกมาพูดคุยกับฉัน | + ? - |
| 9. ฉันอยากจะออกกำลังกายโดย
ก. ฟันดาบ หรือขี่ม้า ข. นวดปลัดขีหรือรักบี้ | ก ? ข |
| 10. ฉันมักจะยิ้มให้กับตัวเองเมื่อได้เห็นความแตกต่าง ระหว่างสิ่งที่ตนพูดกับสิ่งที่เขาทำ | + ? - |
| 11. เมื่อเป็นเด็กฉันรู้สึกเสียใจที่จะจากบ้านไปโรงเรียน ทุกวัน | + ? - |

12. เมื่อฉันได้ทำความดี ฉันจะ
ก. ให้เหตุการณ์นั้น ๆ ผ่านไปตามวันเวลา
ข. เล่าถึงความคิดนั้น ๆ ให้ใคร ๆ ได้ยินอีก..... ก ? ข
13. เมื่อใครมีความประพฤติเลวทราม ฉันรู้สึก
ก. ไม่ใช่อุทธะของฉัน
ข. จะต้องทำให้เขารู้สึกว่าไม่มีใครชอบชมหน้าเขา..... ก ? ข
14. เมื่อฉันรู้จักใครเป็นครั้งแรก ฉันจะ
ก. สนทนากับเขาด้วยเรื่องการเมือง หรือสังคม
ข. ให้เขาเล่าเรื่องตลกให้ฟัง..... ก ? ข
15. เมื่อฉันวางแผนที่จะทำอะไร ฉันชอบที่จะทำคนเดียว โดยไม่ต้องขอความช่วยเหลือจากคนอื่น + ? -
16. ฉันคิดเพียงที่จะใช้เวลาฉันไปกับสิ่งที่ "ควรจะเป็นเช่นนั้น" + ? -
17. เมื่อกำลังจะเดินทางโดยรถไฟ ฉันรู้สึกรีบร้อน และกระวนกระวายใจ ทั้งๆที่รู้ว่ามีเวลาพอ..... + ? -
18. บางขณะ (แม้จะน้อยมาก) ฉันรู้สึกเกลียดพ่อแม่..... + ? -
19. ฉันคงมีความสุขกับงานชนิดที่ค่อนข้างหนักกว่างานจากลูกจ้าง หรือลูกค้าอยู่ตลอดเวลา + ? -
20. ฉันคิดว่าคำตรงข้ามของคำที่ตรงกันข้ามกับ "ไม่แน่นอน" คือ
ก. บังเอิญ ข. สะเปะสะขาว ค. หยาด..... ก ข ค
21. ฉันมีพลังงานความสามารถมากพอสมควร การบอกให้ฉันต้องการ..... + ? -
22. ฉันรู้สึกกระตือรือร้นมากที่จะเล่าให้ใคร ๆ ฟังว่าฉันได้เข้าไปร่วมในค่ายคนเป็ด..... + ? -
23. ฉันชอบมากที่จะเข้าไปร่วมในงานที่มีผู้คนมาก ๆ เช่นงานสังคม งานกินรำ เป็นต้น..... + ? -
24. ฉันรู้สึกว่า
ก. งานบางอย่างไม่ต้องการความละเอียดเหมือนงานอื่น ๆ
ข. ควรทำทุกอย่างด้วยความสมบูรณ์แบบ..... ก ? ข
25. ตามถนนหรือในที่สาธารณะ ฉันไม่ชอบเห็นการลงหน้ากัน + ? -
26. ฉันอยากจะเป็น
ก. พระ ข. นาสถา..... ก ? ข
27. ถ้าเพื่อนบ้านมาตลอดฉันด้วยเรื่องเล็ก ๆ น้อย ๆ ฉันรู้สึกมากกว่าที่จะแสดงให้เขารู้ + ? -
28. ฉันอยากจะถูก
ก. ภาชนะหรือของหนัก ๆ ใด ๆ
ข. ภาชนะประเภทกระเพาะเปลือกสังกะสี..... ก ? ข
29. เมื่อฉันได้รับมอบหมายให้ทำงานใด ฉันจะขอทราบในรายละเอียดเสียก่อน มิเช่นนั้นฉันไม่ทำ... + ? -
30. ฉันรู้สึกว่า ควรหลีกเลี่ยงการคบหาชน "สุกซึ่ก" + ? -
31. ถ้าฉันเก่งหมากรุก และโบดิงพอ ๆ กัน ฉันจะเล่น
ก. หมากรุก ข. โบดิง..... ก ? ข
32. ฉันรู้สึกว่าการหาเงินหาทองโดยวิธีที่คดโกงหรือฉ้อโกงเล็ก ๆ น้อย ๆ แม้จะรู้ว่าเป็นการกระทำที่ผิดก็
ก. หรือวิชาวิเศษก็ตาม..... + ? -

33. ฉันอยากจะทำอะไรสักอย่างในชีวิตของฉันไว้กับ
 ก. การประกันภัย ข. โชคความ..... ก ? ข

34. ฉันสามารถที่จะลืมความวิตกกังวลและความรับผิดชอบใดๆ เมื่อไรก็ได้ + ? -

35. ฉันรู้สึกลำบากใจ ที่จะยอมรับในสิ่งที่ได้ทำผิด + ? -

36. ในที่ทำงาน ฉันอยากจะทำงานในหน้าที่
 ก. งานสารบรรณ ข. งานประชาสัมพันธ์ ก ? ข

37. คำใดที่ต่างจากคำอื่น ๆ ก. เรือ ข. ไกล ค. เตื่อ ก ข ค

38. สุขภาพของฉันมักจะได้รับการกระทบกระเทือนจากสิ่งที่เปลี่ยนแปลงอย่างกะทันหัน และเป็นผล
 ทำให้ฉันต้องเปลี่ยนแผนการที่วางไว้ + ? -

39. ฉันจะมีความสุขมาก ถ้ามีคนรับใช้ที่จะเรียกใช้ได้ตามโอกาสอันสมควร + ? -

40. เมื่ออยู่ในกลุ่มเพื่อนฝูง ฉันรู้สึกเคอะเขิน และวางตัวไม่ได้ที่เท่าที่ควร + ? -

41. ฉันคิดว่าคนควรประพฤติตามหลักศีลธรรมให้มากกว่าที่เป็นอยู่ขณะนี้ + ? -

42. เมื่อรู้สึกโกรธ ฉันคิดว่าเจอ ๆ เอาไว้เป็นวิธีที่ดีที่สุด + ? -

43. ฉันสามารถที่จะทำงานหนัก ๆ ได้โดยไม่เมื่อยล้าได้ดีกว่าคนอื่น ๆ + ? -

44. ฉันคิดว่าพยานส่วนมากพูดความจริง แม้จะรู้สึกกระตาคใจก็ตาม + ? -

45. เวลาใช้ความคิด ฉันพบว่า การเดินไป ๆ มา ๆ เป็นสิ่งที่ช่วยได้ + ? -

46. ฉันคิดว่าประเทศของเราควรทุ่มเทเงินทองเพื่อ
 ก. อารยธรรมอันศักดิ์สิทธิ์ ข. การศึกษา ก ? ข

47. ฉันใช้เวลาตอนเย็น โดย ก. เล่นไพ่ ข. กันดูรูปเก่า ๆ ก ? ข

48. ฉันชอบอ่าน ก. นวนิยายอิงประวัติศาสตร์ เรื่องดี ๆ
 ข. บทความทางวิทยาศาสตร์ ว่าด้วยการใช้ทรัพยากรธรรมชาติ ก ? ข

49. โลกนี้มีคนดีมากกว่าคนเลว มาก + ? -

50. ฉันคิดว่า ฉันมีหัวทางวางแผน มีพลังงานความสามารถ และมีความกระตือรือร้น มากกว่าคน
 ที่ประสบผลสำเร็จพอ ๆ กับฉัน + ? -

51. ฉันไม่อยู่ในอารมณ์ที่อยากจะพบเห็นหรือพูดคุยกับใคร ๆ
 ก. นาน ๆ ที่ ข. บ่อย ๆ มาก ก ? ข

52. เมื่อฉันรู้ว่า สิ่งที่คุณกำลังทำอยู่ ถูกต้อง ฉันรู้สึกว่ามันง่ายขึ้น + ? -

53. ฉันอยากจะทำงาน
 ก. งานธุรกิจที่ต้องพบปะกับผู้คนมาก ๆ
 ข. สถาปนิกที่นั่งทำงานอยู่ในห้องอย่างเงียบ ๆ ก ? ข

54. ถ้าตัดคู่กับดีเทา ความเจ็บปวดควรจะคู่กับ
ก. นาคแผด ข. เจ็บใจ ค. ไม่สะดวก ก ข ค
55. เวลานอนหลับ ฉันไม่เคยละเมอ..... + ? -
56. ฉันสามารถที่จะโกหกใครซึ่ง ๆ หน้าได้..... + ? -
57. ฉันเคยทำงานได้ผลดี เกี่ยวกับการจัดชุมนุม ทีม หรือคณะ..... + ? -
58. ฉันนิยมนับถือคนประเภท ก. ฉลาดแต่ไวใจไม่ค่อยได้
ข. คนที่มีความฉลาดปานกลางแต่เป็นตัวของตัวเอง..... ก ? ข
59. เมื่อมีความทุกข์ใจ ฉันก็สามารถที่จะระงับความเดือดร้อนนั้นได้..... + ? -
60. เมื่อไม่ได้รับการสนับสนุน หรืออยู่ในสถานการณ์ที่อึดอัดใจ ฉันเกือบจะน้ำตาไหล..... + ? -
61. ฉันคิดว่า ชาวต่างประเทศให้ความเป็นมิตรต่อเรามากกว่า ที่เราคิดไว้..... + ? -
62. แต่ละวัน ฉันมีเวลาที่จะเพิกเฉยไปกับการคิดค้นไปคนเดียว โดยปราศจากการรบกวนจากคนอื่น..... + ? -
63. ฉันรู้สึกว่าการอยู่ต่อแถวหรือรอเบาะที่นั่ง ๆ หิม ๆ + ? -
64. ฉันคิดว่าการศึกษาแผนใหม่แบบที่ควรใช้ไม่เร็วเกินไป..... + ? -
65. ที่โรงเรียน ฉันเรียนหนังสือโดย
ก. เรียนในชั้นเรียน ข. อ่านจากหนังสือ..... ก ? ข
66. ฉันหลีกเลี่ยงไม่ยอมเข้าไปยุ่งเกี่ยวกับงานรับผิดชอบทางสังคมหรือหน่วยงานอื่น ๆ + ? -
67. เมื่อเผชิญกับปัญหาที่ยาก และมีทางแก้หลายทาง ฉันจะ
ก. เลือกทำปัญหาอื่น ข. ใช้หลาย ๆ วิธีกับปัญหานี้..... ก ? -
68. ฉันมีอารมณ์หงุดหงิด ไม่วันไหน..... + ? -
69. ฉันรู้สึกว่า บางเวลาจิตใจของฉันไม่แจ่มใสเหมือนคนอื่น ๆ..... + ? -
70. เมื่อจะนัดหมายกับใคร ฉันยินดีที่จะให้เขาเลือกเวลานัดได้ตามชอบใจ แม้ว่าจะไม่ค่อยสะดวก
ต่อฉันนักก็ตาม... .. + ? -
71. เลขที่ออกจาก 1, 2, 3, 6, 5,... คือ ก. 10 ข. 5 ค. 7..... ก ข ค
72. ฉันมีแนวโน้มชอบที่จะวิจารณ์ผลงานของคนอื่น ๆ + ? -
73. ฉันชอบที่จะทำอะไรด้วยตัวฉันเอง มากกว่าที่จะให้ใครมาคอยรับใช้..... + ? -
74. ฉันรักการท่องเที่ยว ทุก ๆ เวลา.. .. + ? -
75. บางทีฉันรู้สึกเกือบจะเป็นลม เมื่อเห็นเลือดหรือความเจ็บปวดอย่างแสนสาหัส..... + ? -
76. ฉันชอบสนทนากับเกี่ยวกับปัญหาที่ยุ่งยาก..... + ? -
77. ฉันอยากจะเป็น ก. วิศวกรทางก่อสร้าง
ข. ครูที่สอนหลักศีลธรรมจรรยา..... ก ? ข
78. ฉันต้องระวังการเข้าไปเกี่ยวข้องกับพัวพันมากเกินไป กับปัญหาของคนอื่น + ? -
79. ฉันรู้สึกว่าเพื่อนบ้านสนิทสนมกันด้วยเรื่องอะไรที่ระแคะระคาย
ก. ทุก ๆ ครึ่ง ข. นาน ๆ ครึ่ง..... ก ? ข
80. โดยปรกติฉันมักจะมองไม่เห็นสิ่งโฆษณาชวนเชื่อที่แฝงไว้ในสิ่งที่ฉันอ่าน นอกจากจะมีใครบอกให้รู้..... + ? -

81. ฉันคิดว่าเรื่องสั้น (Story) และภาพยนตร์ควรจะแฝงไว้ด้วยคติธรรม..... + ? -
82. ความเคียดแค้นส่วนมากมักจะเกิดจากบุคคลประเภท
 ก. พวกที่ชอบเปลี่ยนของที่ถืออยู่แล้ว จ. พวกที่ไม่ยอมรับของใหม่..... ก ? ข
83. บางทีฉันไม่แน่ใจในความคิดของตัวเอง เพราะกลัวไม่ได้ความ..... + ? -
84. คนที่เจ้าระเบียบ เข้มงวด ดูเหมือนจะเข้ากับฉันไม่ได้..... + ? -
85. แต่ฉันจะความจำของฉันไม่ได้เปลี่ยนแปลงไปมาก..... + ? -
86. ฉันอาจจะคิดถึงหัวอกคนอื่น น้อยกว่าที่คนอื่นมีต่อฉัน..... + ? -
87. ฉันรู้สึกว่าคุณมีความจริงใจกับฉันได้มากกว่าคนอื่น ๆ..... + ? -
88. ถ้า 1 รอบหน้าปัทม์ เข็มยาวเดินเวลาเดิน 85 นาที นาฬิกาเรือนนั้นเดินเร็วหรือช้า
 ก. ช้า ข. ตรงเวลา ค. เร็ว..... ก ข ค
89. ฉันไม่ชอบคนที่ทำให้ฉันต้องเสียเวลาโดยไม่จำเป็น..... + ? -
90. ใคร ๆ มักจะพูดว่าฉันชอบทำอะไรเอาแต่ใจตัวเอง..... + ? -
91. ถ้าฉันได้รับมอบให้ทำงาน และได้รับเครื่องมือที่ไม่เหมาะที่จะใช้กับงานนั้นๆ ฉันก็จะไม่พูดอะไร..... + ? -
92. ที่บ้าน เมื่อมีเวลารว่าง ฉันจะ ก. พักผ่อน พุด-คุย ข. ทำงานพิเศษต่าง ๆ..... ก ? ข
93. ฉันรู้สึกอาย และเต็มไปด้วยความระแวงเมื่อคบกับเพื่อนใหม่..... + ? -
94. ฉันคิดว่าสิ่งที่กล่าวไว้ด้วยภาษาร้อยกรอง ก็อาจจะใช้ภาษาร้อยแก้วเขียนแทนได้เหมือนกัน.... + ? -
95. ฉันสงสัยว่าคนที่แสดงตัวเป็นเพื่อนต่อฉันนั้น เมื่อลับหลังอาจจะไม่ซื่อต่อฉันก็ได้
 ก. ใช่ เสมอๆ ข. เป็นครั้งคราว ค. มีน้อยมาก..... ก ข ค
96. ฉันคิดว่าบุคคลิกภาพของฉันเหมือนเดิม แม้ว่าฉันจะได้รับประสบการณ์แปลก ๆ ในระหว่างปีที่ผ่านมาก็ตาม..... + ? -
97. ฉันมีแนวโน้มเป็นคนพูดซ้ำ..... + ? -
98. ฉันกลัวหรือไม่ชอบสิ่งบางอย่าง โดยไม่ค่อยจะมีเหตุผลนัก เช่น สัตว์บางอย่าง, สถานที่บางแห่ง, ฯลฯ เป็นต้น..... + ? -
99. ฉันอยากจะทำงานเกี่ยวกับ
 ก. งานเกี่ยวกับการจัดหน่วยงานให้ดีขึ้น ข. งานสารบรรณและที่เกี่ยวข้องกับระเบียบกฎเกณฑ์.. ค ? ข
100. ถ้าจะให้ คงคะแนนเสียง (Vote) ว่าสิ่งใดดีหรือไม่ดี ฉันจะ
 ก. คำหรือความคิดเห็นหรือคำวิจารณ์เกี่ยวกับเรื่องนั้น ๆ
 ข. ศึกษาข้อมูล และข้อเท็จจริงอื่น ๆ ที่เกี่ยวข้อง..... ก ? ข
101. เวลานอนหลับ ฉันมักจะฝันแปลก ๆ..... + ? -
102. ถ้าปล่อยฉันไว้ในบ้านที่เปลี่ยว ๆ คนเดียว ฉันรู้สึกไม่สบายใจและกลัว..... + ? -
103. ฉันอาจจะทำที่เห็นเหมือนกับคนที่ฉันไม่ชอบขึ้นหน้าเสียก็ได้..... + ? -
104. คำใดที่ต่างจากคำอื่น ๆ ก. รัง ข. เห็น ค. สัมผัส..... ก ข ค
105. ถ้าแม่ของชาติเป็นน้องสาวของพ่อของเพชร เพชรเป็นอะไรกับชาติ
 ก. ญาติ ข. หลาน ค. ลูก..... ก ข ค

จบตอนที่ 3

ขอขอบคุณทุกท่านที่ให้ความร่วมมือมาตลอดนี้ หวังว่าท่านคงเพลิดเพลินไม่น้อยทีเดียว

APPENDIX B

THE COLLEGE OF EDUCATION

(THAILAND, 1969)

The college of Education is a degree-granting institution engaged mainly in teacher education training of education officials. At the present moment, the College has 7 campuses, the main campus being on Prasarn Mit Lane, off Sukumvit Road, in the capital city of Bangkok. The 6 branch-campuses are:

1. The College of Education, Patoom Wan, in Bangkok.
2. The College of Education, Bansaen, in the Province of Cholburi, in the eastern part of the country.
3. The College of Education, Pitsanuloke, in the Province of Pitsanuloke, in the central part of the country.
4. The College of Education, Mahasarakam, in the Province of Mahasarakam, in the Northeast.
5. The College of Education, Songkhla, in the Province of Songkhla, in the South.
6. The College of Education, Pra Nakorn, Bangkok.

The first three older campuses have their own demonstration schools to provide laboratory experiences in student teaching and relevant activities.

Currently, there are two major programs on the undergraduate level, and two on the graduate level, plus in-service training programs, and programs in educational reasearch.

Undergraduate Level

1. A FOUR-YEAR PROGRAM leading to the Bachelor of Education Degree. This program admits high school graduates as well as graduates from the teacher-training schools and colleges throughout the country. Pursuing this program, a student may choose to study in any one of the following six professional areas:

1. Elementary Education
2. Secondary Education
3. Vocational Education
4. Educational Administration
5. Rural Education
6. Physical Education

In addition, he has to take an academic major (and also academic minor in the case his professional field is Secondary Education). On top of the arts and science general background offered on the freshman and sophomore year, the College is now able to offer the following academic majors and minors:

1. Thai Language
2. Foreign Language (English, French, and German)
3. Geography
4. History
5. Social Studies
6. Science
7. Mathematics
8. Science and Mathematics

9. Biology
10. Physics
11. Chemistry
12. Food Science
13. Nutrition
14. Art Education
15. Health, Physical Education, and Recreation
16. Industrial Arts Education

More academic majors will be added as the College continue to grow.

II. A TWO-YEAR PROGRAM leading to the Bachelor of Education Degree. This program admits graduates of the various Teachers Colleges throughout the country to study on the third year level, having completed work equivalent to that of the first two years of the College of Education.

Graduate Level

I. SPECIALIZED PROGRAM is a one-year program leading to the "Certificate in Specialized Subject." The program enrolls students with a Bachelor's degree, giving them an opportunity to study in just one particular field for further depth. At present (1969), twelve fields are offered:

1. Thai language and literature
2. English language and literature
3. Mathematics
4. Biology
5. Physics
6. Chemistry

7. Geography
8. History
9. Guidance
10. Educational Measurement
11. Library Science
12. Audio-Visual Education

II. THE MASTER'S DEGREE PROGRAM is a two-year program after a bachelor's degree. Students are required to take one professional area, one academic major, and also to present an acceptable thesis. In certain cases, as in Developmental Psychology, no academic major is required. The professional areas include:

1. Elementary Education
2. Secondary Education
3. Teacher and High Education
4. Developmental Psychology^{*}
5. Educational Psychology^{**}
6. Guidance
7. Audio-Visual Education
8. Library Science
9. Educational Measurement

^{*}In collaboration with the Bangkok Institute for Child Study.

^{**}Also in collaboration with the Bangkok Institute for Child Study

In-service Training Program

In-service training programs are offered regularly as follows:

1. The Twilight School for teachers-in-the-field:

This program is in operation all year round, and is offered to those teachers who want to work toward the Bachelor of Education Degree. Classes are in session from 5 to 8 p.m.

2. The Summer School: The summer session is operated every year, also for teachers-in-the-field to carry on their work toward the Bachelor of Education Degree, in continuation of the Twilight School.

3. An in-service program for provincial school superintendents.

4. An in-service program for teachers and workers in nutrition and food services.

5. An in-service program in educational measurement for teachers from various institutions at various levels.

6. An in-service program in guidance for secondary school teachers.

Research

Educational research activities are mainly carried out by Educational Research Department of the College in collaboration with the Bangkok Institute for Child Study, the Ministry of Education, and other agencies. Currently, long term research activities are directed towards elementary school curriculum, test construction, and rural projects will be considered as funds and facilities become available.

APPENDIX C

COMPREHENSIVE SCHOOL PROJECT

The 1960 National Scheme of Education of Thailand has put particular stress upon meeting the needs of the individuals and society. It reaffirmed the goal of the Karachi Plan (Compulsory education through grade seven) and introduced some significant curricular experimentation at the secondary level. Consequently, the most novel change in the secondary schools is the experimental comprehensive-type high school. The curriculum for these schools combines both academic and pre-vocational subjects. It is intended to meet the needs of those who will not be continuing their education in a college or university, as well as those who aspire to such higher education.

The first permanently established comprehensive school in Thailand was opened in Korat in 1960. This school, Suranaree Wittaya, is still in operation as a comprehensive girl's school. The second school is Rajseema Wittayalai, a boy's secondary school, also in Korat. These two comprehensive schools stand as important milestones in Thai education.

The committee for the Comprehensive Secondary Schools was established in 1965 by the Ministry of Education. Thus, the expansion of comprehensive schools has become a national policy.

The Canadian Government approved a long-term, no

interest loan for the purchase of equipment in Canada, and approved grants to be used for the training of teachers and supervisors from Thailand in Canadian Universities over a three year period (1967-1969).

As of June 1969, three groups of supervisors and school staff members, totalling 111 persons had completed at the University of Alberta, one year programs specially developed to orient Thai teachers to the nature and needs of comprehensive-type secondary schools.

To execute the provisions of the Agreement, an ad hoc committee was set up in 1966 to select the first 34 Thais to enter the preparation program at The University of Alberta. Later, in 1967, the Secondary Education Department established a Selection Committee, which consisted of the Director General as chairman, the Deputy Director General, the Head of the Supervisory Unit, the Head of the Comprehensive School Project No. 2, the Head and Secretary of Comprehensive School Project No. 1, two representatives from D.T.E.C. (The Department of Technical and Economic Cooperation), and the Canadian Team co-ordinator.

The supervisors were selected from a list of about 25 nominations submitted by the Supervisory Unit in consultation with project officials. The seven administrators were nominated by the Director General in consultation with other Secondary Education and project officials.

Three criteria greatly influenced the number of applications that were given consideration: one was the competence of the applicants in English; a second was the needs of the schools in terms of the kind of positions to be filled; and the third was the academic qualifications of the applicants.

By late 1967, it became evident that the Comprehensive School Project No. 1 would be far from completed by July, 1969, the end of the current contract agreement. In June, the Secondary Education Department forwarded its request for an extension to Ottawa and to D.T.E.C. in Bangkok. The Canadian recommendations for an extension of the training program and the advisory assistance were based largely upon the belief that the whole program would be far from completed by July 1969. The building program had been extended by Thai officials from three to five years. Furthermore, there is a need for more teachers in the classroom who have received training in the operation of comprehensive schools.

In 1969, there were 25 grants for graduate diploma training for teachers and 10 master's degrees. The number of grants for 1970 are the same as 1969, and for 1971 and 1972 there will be at least 5 master's degree scholarships provided for the Thai officials involved in the comprehensive-type school project.

APPENDIX D

TABLE XII

RAW SCORE DATA OF THE ENGLISH VERSION

Subjects	A	B	C	E	F	G	H	I	L	M	N	O	Q ₁	Q ₂	Q ₃	Q ₄
1	5	5	6	2	10	7	4	4	4	7	6	6	9	8	6	8
2	9	5	5	7	11	2	10	8	8	6	6	6	10	8	3	5
3	7	4	4	4	8	6	6	6	9	5	6	7	5	6	6	4
4	8	2	7	6	8	6	5	6	4	4	7	7	5	7	8	4
5	6	5	6	6	6	8	4	3	5	4	6	8	8	8	6	4
6	9	4	5	6	7	8	8	10	7	6	8	6	2	4	6	8
7	8	3	6	8	7	5	9	7	7	7	5	7	8	3	4	7
8	5	4	9	4	5	6	5	6	5	7	6	4	8	8	7	5
9	6	3	3	7	6	7	5	3	5	6	7	6	6	9	8	8
10	7	6	7	7	9	6	6	9	2	6	3	6	4	8	7	5
11	5	5	9	6	7	6	7	4	7	6	7	6	5	8	6	7
12	9	2	6	9	8	6	7	8	6	9	5	9	8	7	4	4
13	6	6	5	5	6	9	4	7	8	5	4	7	10	5	5	8
14	4	4	8	3	7	6	7	4	5	5	7	5	7	6	5	6
15	6	4	6	5	5	5	5	7	6	8	6	5	7	8	6	7
16	8	3	5	2	9	9	9	8	3	5	7	6	3	9	5	9
17	7	3	9	5	8	6	7	10	6	6	1	9	4	8	5	9
18	5	5	6	2	10	7	4	4	4	7	6	6	9	8	6	8
19	7	2	6	2	3	4	4	6	4	6	5	5	6	8	7	3
20	7	5	2	4	7	5	4	8	4	5	6	7	3	9	8	6
21	6	3	7	4	8	9	2	8	5	5	3	3	5	7	9	4
22	8	3	6	5	5	8	7	5	6	5	6	5	6	8	7	6
23	3	6	5	5	7	9	6	9	7	6	4	7	6	7	5	8
24	8	3	6	5	7	6	9	4	4	7	4	8	6	5	9	7
25	5	6	8	4	5	10	5	5	8	6	10	6	8	7	7	5
26	6	3	5	5	4	7	5	9	5	6	9	6	5	9	8	8
27	5	5	6	2	10	7	4	4	4	7	6	6	9	8	6	8

TABLE XII (continued)

RAW SCORE DATA OF THE ENGLISH VERSION

Subjects	A	B	C	E	F	G	H	I	L	M	N	O	Q ₁	Q ₂	Q ₃	Q ₄
28	3	3	6	6	7	7	6	5	7	5	7	6	3	5	6	4
29	7	3	8	4	9	7	7	1	9	2	5	5	5	10	8	5
30	5	6	6	6	5	5	6	5	6	6	6	4	6	6	6	6
31	8	2	9	8	6	4	5	8	7	6	4	5	6	8	5	7
32	8	5	5	7	5	7	5	7	7	4	6	5	6	7	7	6
33	7	6	6	5	7	10	7	6	6	6	7	6	7	5	10	9
34	5	3	8	8	7	8	8	7	7	4	6	6	8	3	3	6
35	4	3	8	4	8	10	7	4	8	6	4	2	6	10	7	6
36	6	5	5	7	4	7	8	6	7	9	4	9	7	8	8	8
37	7	1	4	6	6	6	6	6	2	4	5	6	6	8	7	4
38	5	5	6	2	10	7	4	4	4	7	6	6	9	8	6	8
39	7	6	6	3	9	8	8	3	7	7	7	7	5	9	9	5
40	5	4	4	7	7	7	5	5	6	4	3	10	7	6	8	8
41	6	3	6	6	6	9	5	8	7	7	4	8	6	8	7	7
42	7	5	9	4	6	7	8	6	6	7	8	6	6	8	6	4
43	8	2	3	5	8	9	5	9	7	4	4	6	6	5	5	6
44	7	4	7	5	6	6	4	7	6	7	4	7	4	6	7	6
45	10	2	7	4	7	6	8	5	5	5	5	3	7	6	6	1
46	7	5	6	6	4	7	3	9	8	7	6	8	5	6	5	7
47	7	5	7	3	5	5	5	7	6	7	6	5	7	7	9	7
48	8	4	7	7	4	5	6	7	4	7	5	8	6	5	3	2
49	9	3	8	4	5	5	9	7	5	9	5	5	6	5	7	4
50	7	3	3	3	7	9	9	5	5	3	8	4	5	7	5	6
51	5	2	3	7	5	3	5	5	6	4	5	8	7	8	5	6
52	7	2	7	4	4	4	7	9	7	7	6	7	4	6	2	6
53	6	4	6	5	4	7	4	4	5	4	7	6	6	8	6	10
54	6	6	6	8	8	7	4	8	7	6	7	6	4	4	3	6

APPENDIX E

TABLE XIII

RAW SCORE DATA OF THE THAI VERSION

Subjects	A	B	C	E	F	G	H	I	L	M	N	O	Q ₁	Q ₂	Q ₂	Q ₄
1	7	5	6	3	7	7	4	5	4	6	6	7	8	8	7	7
2	8	5	6	8	8	4	8	8	8	8	6	6	8	8	5	5
3	7	4	5	4	7	6	7	6	8	6	6	6	5	6	6	4
4	5	3	7	7	5	7	7	6	7	3	7	4	7	5	5	5
5	8	4	6	5	6	9	6	4	7	3	6	5	7	10	4	6
6	8	5	5	4	8	5	6	8	6	8	5	6	5	6	6	3
7	9	3	5	6	8	7	8	8	6	8	8	5	5	8	7	9
8	7	6	6	5	6	8	7	6	7	8	5	5	6	6	8	5
9	6	3	3	7	6	7	5	3	5	7	6	6	6	9	8	8
10	7	7	8	6	7	5	6	4	5	4	8	6	6	7	9	4
11	5	4	9	6	7	6	7	4	7	6	7	6	5	8	6	7
12	8	1	6	4	7	6	6	6	6	5	6	6	7	8	6	5
13	7	3	5	6	9	12	3	6	9	3	7	7	8	8	6	7
14	5	2	4	4	5	11	5	9	5	5	5	7	5	9	7	5
15	6	4	8	4	6	6	7	8	7	7	5	4	4	7	5	6
16	8	3	5	4	6	5	9	7	4	4	7	5	7	8	5	6
17	8	5	5	2	6	6	2	8	5	8	4	10	7	9	8	8
18	5	5	6	5	9	8	4	4	4	7	6	7	8	8	6	8
19	6	3	4	5	3	7	5	5	5	7	7	6	4	6	5	8
20	6	3	6	5	6	8	4	5	5	2	5	5	4	9	6	7
21	7	3	5	4	6	9	2	9	4	5	3	6	6	8	7	5
22	6	4	6	5	7	8	7	8	6	8	7	5	7	7	8	6
23	4	5	5	6	7	10	6	8	7	2	4	6	7	8	7	8
24	8	3	6	5	7	8	5	5	5	9	7	8	6	9	8	7
25	5	3	4	6	8	6	7	9	4	6	4	4	2	8	7	4
26	6	5	10	3	8	7	7	7	5	3	3	5	6	3	8	6
27	5	5	6	5	9	7	4	5	4	7	6	6	8	8	7	8

TABLE XIII (continued)

RAW SCORE DATA OF THE THAI VERSION

Subjects	A	B	C	E	F	G	H	I	L	M	N	O	Q ₁	Q ₂	Q ₃	Q ₄
28	7	2	5	8	8	6	6	5	5	6	5	5	5	9	5	7
29	6	4	7	5	9	7	5	3	8	3	5	7	5	8	8	5
30	7	5	7	3	6	5	4	6	4	5	8	5	5	8	7	8
31	10	2	8	5	9	10	7	3	6	4	6	5	9	8	6	6
32	8	4	3	5	7	7	6	6	8	6	10	5	4	7	5	6
33	7	3	5	5	6	11	5	8	7	5	8	7	6	4	8	7
34	4	3	6	8	8	6	8	9	8	5	8	6	4	10	5	12
35	2	4	8	3	8	5	9	3	4	4	5	3	9	8	4	2
36	5	5	5	8	9	6	8	4	7	9	4	6	8	7	9	5
37	7	1	5	7	10	9	7	7	4	5	7	7	5	7	8	4
38	6	6	6	2	6	7	4	5	4	6	6	7	8	8	6	8
39	4	4	7	5	7	9	7	3	7	4	6	8	5	8	9	9
40	7	4	5	6	2	5	3	5	4	4	7	9	5	8	8	8
41	6	4	5	4	5	7	7	6	7	4	6	6	6	5	8	5
42	7	4	10	6	5	5	7	6	4	7	7	8	6	7	7	5
43	12	4	3	4	7	9	6	9	7	3	5	9	7	6	7	3
44	7	5	7	5	6	10	3	6	5	6	7	6	6	6	5	5
45	9	1	8	6	8	6	6	6	5	7	6	5	6	7	7	1
46	6	4	5	8	6	5	7	6	9	4	6	7	6	7	6	4
47	2	4	6	4	2	8	6	4	5	4	5	6	7	8	5	4
48	8	4	7	7	5	5	5	6	5	7	5	7	7	5	3	2
49	8	4	8	4	6	6	7	7	5	8	6	5	6	6	6	4
50	6	4	3	5	5	8	8	6	5	4	7	4	5	7	5	6
51	5	2	7	2	8	6	2	7	6	5	8	4	5	7	8	3
52	6	2	6	1	9	5	5	8	6	6	7	3	7	8	7	6
53	5	3	6	1	4	9	4	8	2	6	7	5	5	6	6	9
54	7	4	2	3	5	9	5	7	8	10	10	6	5	6	3	9

APPENDIX F

THE IMPROVEMENT OF WORDINGS FOR FACTOR F, N, AND Q2

FACTOR F

6. ในงานสังคม คนไม่ชอบที่ใครจะเข้าเรื่องตลก หรือเรื่องราวอื่น ๆ
23. คนมีความสนใจงานที่เร้าแรงเป็นอย่างมากจนงานที่ลุล่วงตามมาก ๆ เช่นงานเต้นรำ หรืองานสังสรรค์อื่น ๆ
40. เมื่ออยู่รวมกันคนอื่น จะรู้สึกตะแคงเป็นตะกอย และต่างตัวไม่พูดเท่าที่ควร
57. คนเป็นคนตลกแต่ค่อนข้างกลัวเกี่ยวกับการรำสัพเพเหระ กับ หรือตลก
74. คนชอบที่คนจูงใจคนอื่น เมื่อไรก็ไป
91. โดยปรกติคนจะไม่พูดอะไร ที่คนอื่นมอบให้ทำงานแต่ได้ประโยชน์ต่อคนอื่น ๆ ไม่เหมาะเท่าที่ควร

FACTOR N

12. เมื่อสิ่งที่เป็นความลับ หรือประหลาดจนกำลังจะผ่านไป คนจะ
- ก. ให้เหตุการณ์นั้น ๆ ผ่านไปตามรวดเร็ว
- ข. เล็งเห็นเหตุการณ์นั้น ๆ ให้ถี่ถ้วน ๆ ที่อื่นอีก
29. เมื่อคนได้รู้มออยู่ในที่งานใด คนจะร้องว่าให้ไปทำตามคำสั่งซึ่งแรงของ
- คน มีเช่นนั้นหรือไม่
46. คนคิดว่าประเทศไทยเราควรทุ่มเทเงินทองเพื่อ
- ก. ราชการทุกวิถี
- ข. การศึกษา
63. คนรู้สึกรำคาญต่อกฎหรือระเบียบเล็ก ๆ น้อย ๆ ที่ ๆ คนยกยอมนำว่าเป็น
- สิ่งจำเป็นจริง ๆ

THE IMPROVEMENT OF WORDINGS FOR FACTOR F, N, AND Q2 (CONTINUE)

- FACTOR N
80. โดยปรกาศฉันมองไม่เห็นสิ่งไหนมาช่วยเช็ดที่เปียกๆในสิ่งที่ฉันอ่าน นอกจากจะ
มีคนบอกให้รี
97. ฉันมีแนวโน้มที่จะพูดซ้ำ ๆ
- FACTOR Q2
15. เพื่อฉันวางแผนที่จะทำงาน ฉันชอบที่จะทำตามสิ่งที่ฉันคิดเอง โดยมี
ต้องขอความช่วยเหลือจากคนอื่นใด
32. ฉันรู้สึกว่าเป็นการหาวิธีที่ต้องแปลกๆหรือคิดแปลกๆ แม้จะรู้ว่าเป็น
การป้องกันหรือรักษาโรคก็ตาม
49. ในโลกนี้มีคนตีมากกว่าคนประเภทที่ชอบขงขางการทำงานของคนอื่น
66. ฉันหลีกเลี่ยงไม่ตอบคำถามเกี่ยวกับงานที่ต้องรับผิดชอบต่อสังคม หรือหน่วย
งานอื่น ๆ
83. บางทีฉันไม่แน่ใจในความคิดของตัวเอง เพราะกลัวว่าไม่ได้ตามหรือปฏิบัติ-
ยัติตามคำบอก
100. ถ้าฉันได้ออกเสียงว่าสิ่งที่ได้หรือไม่ ฉันจะ
ก. ฉันชอบคิดเห็นหรือคำวิจารณ์เกี่ยวกับเรื่องนั้น ๆ
ข. ดีกว่าคนอื่น ไม่ชอบให้คนอื่น ๆ ที่เกี่ยวข้อง

APPENDIX G

THE IMPROVEMENT OF WORDINGS FOR OTHER FACTORS

<u>FACTOR B</u>	37. คำใดที่ตรงจากคำอื่นอีกสองคำ	ก. แทน ข. ใกล้เคียง	ค. ปรกติด้วย
	83. เพื่อเทียบกันน้ำหนักที่เดินตรงเวลา หนึ่งเดินหนักกว่า 65 นาที	ก. แทน ข. ใกล้เคียง	ค. ปรกติด้วย
<u>FACTOR E</u>	56. ส่วนสามารถโกนที่ตรงๆ นานๆ	ก. แทน ข. ใกล้เคียง	ค. ปรกติด้วย
<u>FACTOR G</u>	58. ส่วนนิยมกับคนประเภท	ก. แทน ข. ใกล้เคียง	ค. ปรกติด้วย
<u>FACTOR H</u>	25. ตามถนนหรือในสี่เหลี่ยม	ก. แทน ข. ใกล้เคียง	ค. ปรกติด้วย
<u>FACTOR I</u>	60. เมื่อเวลาผ่านไปหลายปี	ก. แทน ข. ใกล้เคียง	ค. ปรกติด้วย
<u>FACTOR M</u>	28. ส่วนยากจะหาพบ	ก. แทน ข. ใกล้เคียง	ค. ปรกติด้วย
<u>FACTOR Q4</u>	17. เพื่อที่จะได้เห็นว่ามีความหมาย	ก. แทน ข. ใกล้เคียง	ค. ปรกติด้วย

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